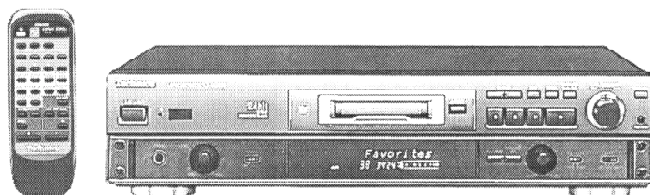


Service Manual

Minidisc Deck

SJ-MD100

**Colour**

(K).....Black Type

Areas

(E) Europe.

(EB) Great Britain.

(EG) Germany.

Specifications

System:	Minidisc digital audio system
Recording;	Magnetic field modulation direct overwrite
Reading;	Non-contact optical system with Semiconductor laser ($\lambda = 780\text{nm}$)
Sampling frequency:	44.1kHz
Coding system:	ATRAC
Channel:	2 channels, stereo
Frequency response:	5–20,000Hz ($\pm 0.3\text{dB}$)
S/N (Play):	99dB
Dynamic range (Play):	97dB
Wow and flutter:	Below measurable limit
Input:	
Analog input (Level/Impedance);	500mV/47k Ω
Digital input (OPTICAL IN1, OPTICAL IN2)	
Wavelength;	660nm
Output:	
Analog output (Level/Impedance);	2.0V/600 Ω
Digital output (OPTICAL);	
Rated output	–17dBm
Wavelength	660nm
Headphone output level:	15mW max. 32 Ω (adjustable)

General

Power supply:	AC230V–240V, 50Hz
Power consumption:	13W
Dimensions (W × H × D):	430 × 300 × 103mm
Weight:	3.4kg

Notes:

Specifications are subject to change without notice.
Weight and dimensions are approximate.

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Licensing Corporation.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Technics®

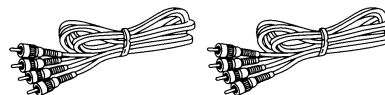
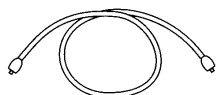
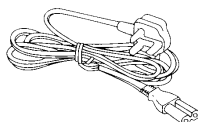
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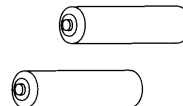
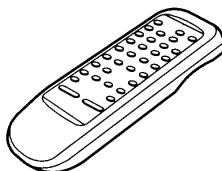
Accessories

AC power supply cord		Optical-fiber cable		Stereo connection cables	
For (EB) area (RJA0044-C)	1	(RJL1X007B08)	1	(RJL2P004B08)	1
For (E),(EG) areas (RJA0043-C)	1				



Remote control transmitter
(EUR645272) 1

Batteries
(R6/LR6,UM-3) 2
Note: There are available on sales route.



The illustration shows an AC power supply cord for (EB) area.

Handling Precautions for MD Unit

The laser diode in the MD unit (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body. So, be careful of electrostatic breakdown during repair of the MD unit (optical pickup).

• Handling of MD unit (optical pickup)

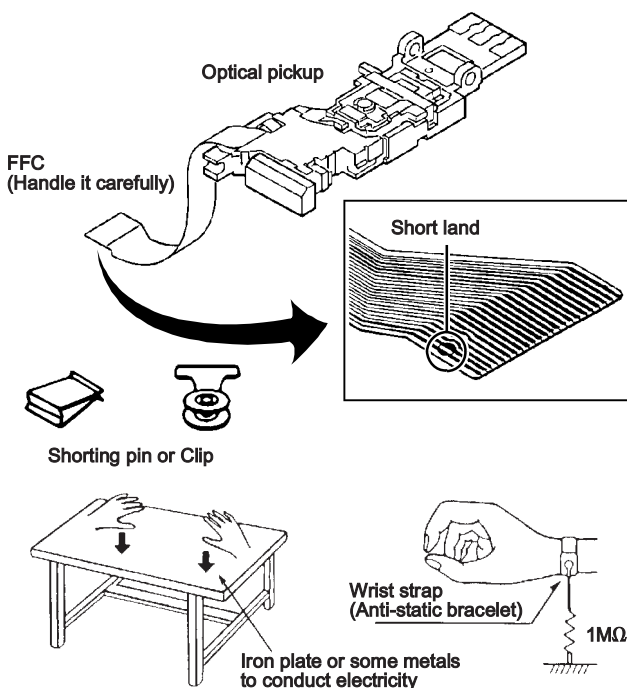
1. Do not subject the MD unit (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board (FFC board).
When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FFC board).

• Grounding for electrostatic breakdown prevention

1. Human body grounding
Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).



CAUTION:

THIS PRODUCT UTILIZES A LASER.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

■ Precaution of Laser Diode

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780 nm
Maximum output radiation power from pick up: 4.9 μ W/VDE

Laser radiation from the pick up unit is safety level, but be sure the followings:

1. Do not disassemble the pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not look at the focus lens using optical instruments.
3. Recommend not to look at pick up lens for a long time.

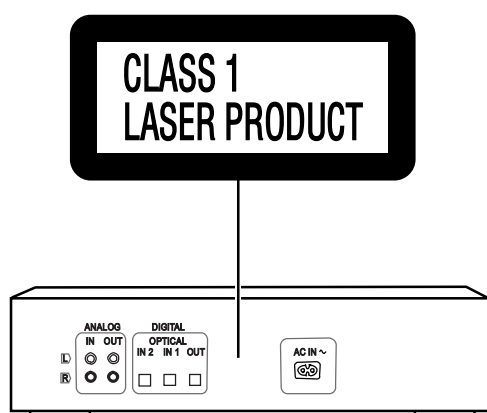
ACHTUNG: Dieses produkt enthält eine laserdioden. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit adgestrahlt.

Wellenlänge: 780 nm

Maximale strahlungsleistung der lasereinheit: 4.9 μ W/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdioden gefährlich ist.
2. Nicht mit optischen instrumenten in die fokussierlinse blicken.
3. Nicht über längere zeit in die fokussierlinse blicken.



DANGER	INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING	OSYNLIG LASERSTRÅLNING NÅR DESSA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta EJ STARÅLEN.
ADVARSEL	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT	UNSICHTBARE LASERSTRALUNG, WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.

(Inside of product)

■ Caution for AC Mains Lead (For United Kingdom)

("EB" area code model only)

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark  or the BSI mark  on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local dealer.

CAUTION!

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral, Brown: Live.

As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black or Blue.

The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL  OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

Before use

Remove the connector cover.

How to replace the fuse

The location of the fuse differ according to the type of AC mains plug (figures A and B). Confirm the AC mains plug fitted and follow the instructions below.

Illustrations may differ from actual AC mains plug.

1. Open the fuse cover with a screwdriver.

Figure A

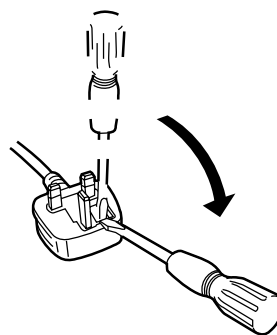
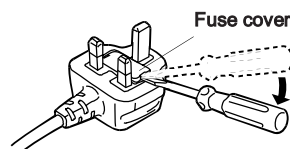


Figure B



2. Replace the fuse and close or attach the fuse cover.

Figure A

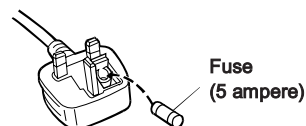
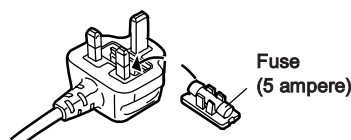
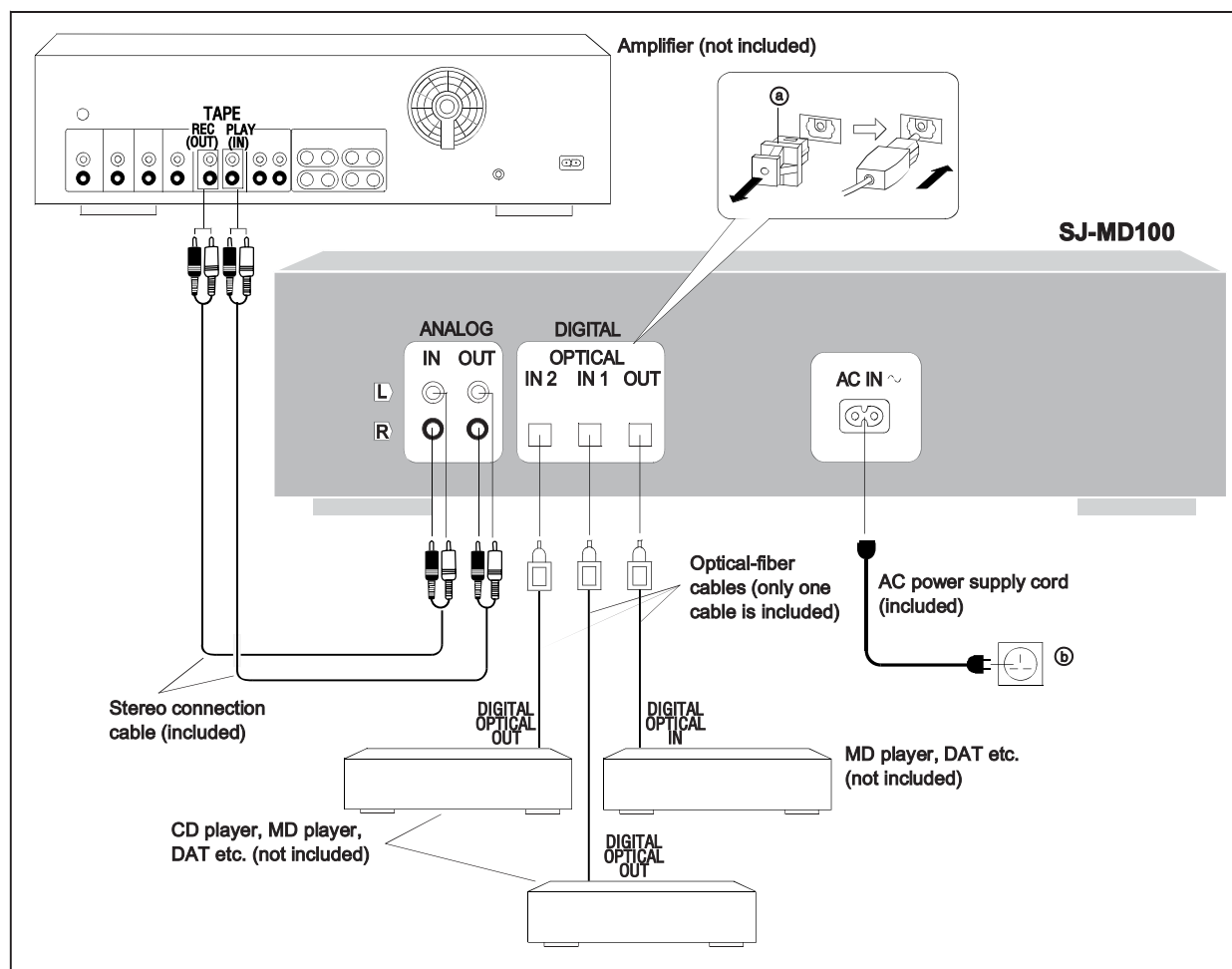


Figure B



■ Connections



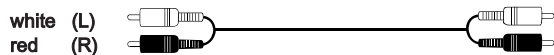
This example shows the unit connected to an amplifier through the ANALOG IN/OUT terminals, and to digital equipment (CD player, MD player, DAT, etc.) through the DIGITAL OPTICAL IN/OUT terminals.

Before making connections, turn off all the components.

ANALOG IN / OUT terminals

Connect the ANALOG OUT terminals to PLAY IN terminals on an amplifier to play through speakers connected to the amplifier. Connect the ANALOG IN terminals to the REC OUT terminals on an amplifier to record sounds from other components connected to the amplifier.

Stereo connection cable



DIGITAL OPTICAL terminals

Remove the dust-protection caps (a) before connecting the optical fiber cables.

Connect IN 1 and IN 2 to OPTICAL OUT terminals on other playback components for digital recording to this unit.

Connect OUT to OPTICAL IN terminals on other recording components to record from this unit.

Note

DIGITAL OPTICAL terminals not in use should be covered by a dust protection cap.

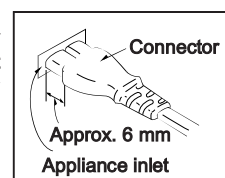
FOR UNITED KINGDOM ONLY
BE SURE TO READ THE CAUTION FOR THE
AC MAINS LEAD BEFORE CONNECTION.

AC IN connector

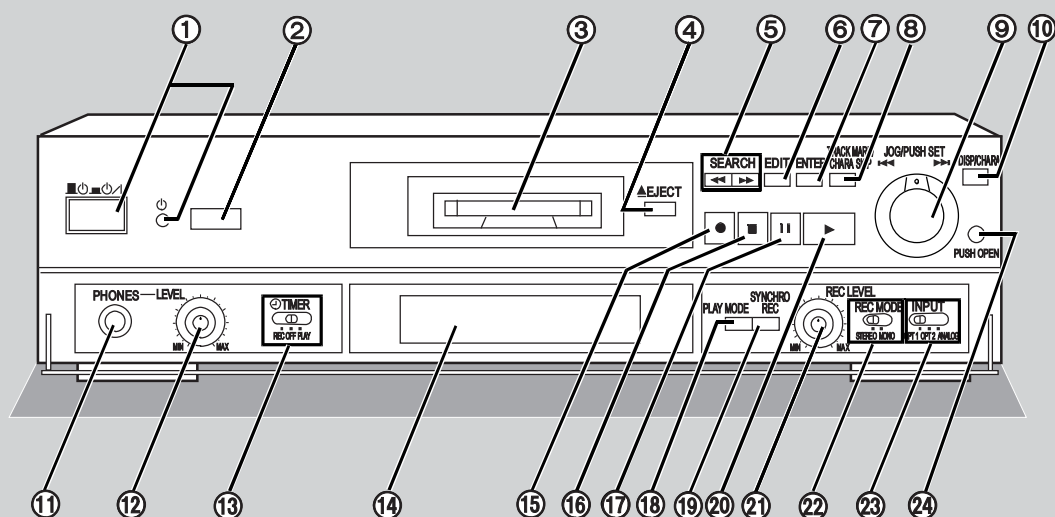
The AC IN connector is connected to an electrical outlet (b) in your home.

Insertion of Connector

Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing. However there is no problem using the unit.



■ Front Panel Controls



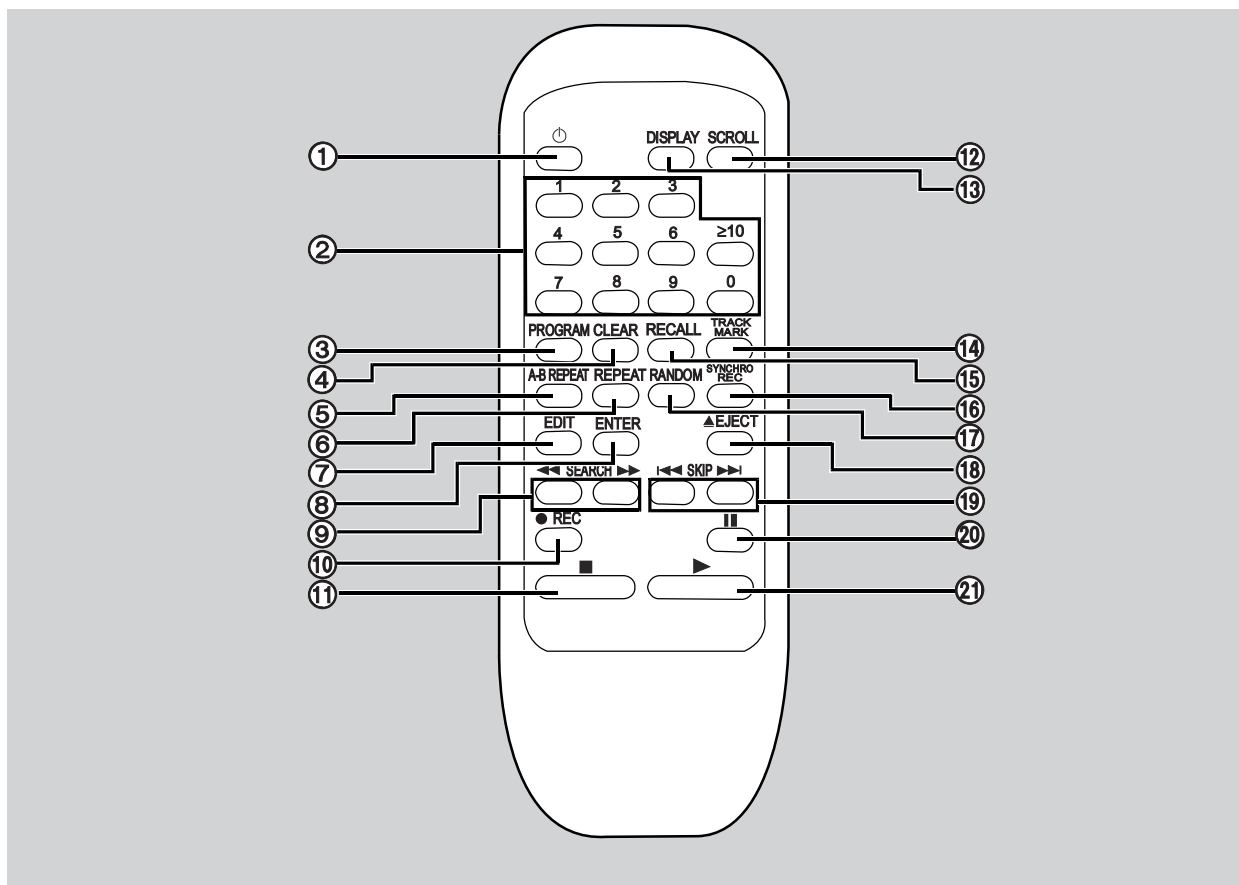
Main unit

No.	Name
①	Unit on/off button (■ ⏻ /I) and remote standby indicator (⏻) Use this button to turn the unit on and off. ■ (off): The unit is in standby mode. ■ (on): The unit is on. The unit can be turned on and off with the remote control. When the unit is turned off with the remote control it is in remote standby and the indicator lights. The unit is still using a small amount of power in the standby and remote standby conditions. Standby uses less power.
②	Remote control signal sensor
③	MD slot
④	Eject button (▲ EJECT)
⑤	Search buttons (◀◀ ▶▶ SEARCH)
⑥	Editing mode button (EDIT)
⑦	Enter button used in editing (ENTER)
⑧	Track mark mode select / Character skip button (TRACK MARK / CHARA SKIP)
⑨	JOG/skip dial (JOG/PUSH SET ◀◀, ▶▶)
⑩	Display mode select / Character select button (DISP/CHARA)

No.	Name
⑪	Headphones Jack (PHONES)
⑫	Headphones level control (LEVEL)
⑬	Timer selector (⌚ TIMER)
⑭	Display
⑮	Record button (●)
⑯	Stop button (■)
⑰	Pause button (⏸)
⑱	Playback mode selector (PLAY MODE)
⑲	Synchro-record button (SYNCHRO REC)
⑳	Playback/recording start button (▶)
㉑	Recording level control (REC LEVEL)
㉒	Recording mode selector (REC MODE)
㉓	Input selector (INPUT)
㉔	Panel open button (PUSH OPEN) Press this button to open the transparent panel. Close the panel by hand.

Note

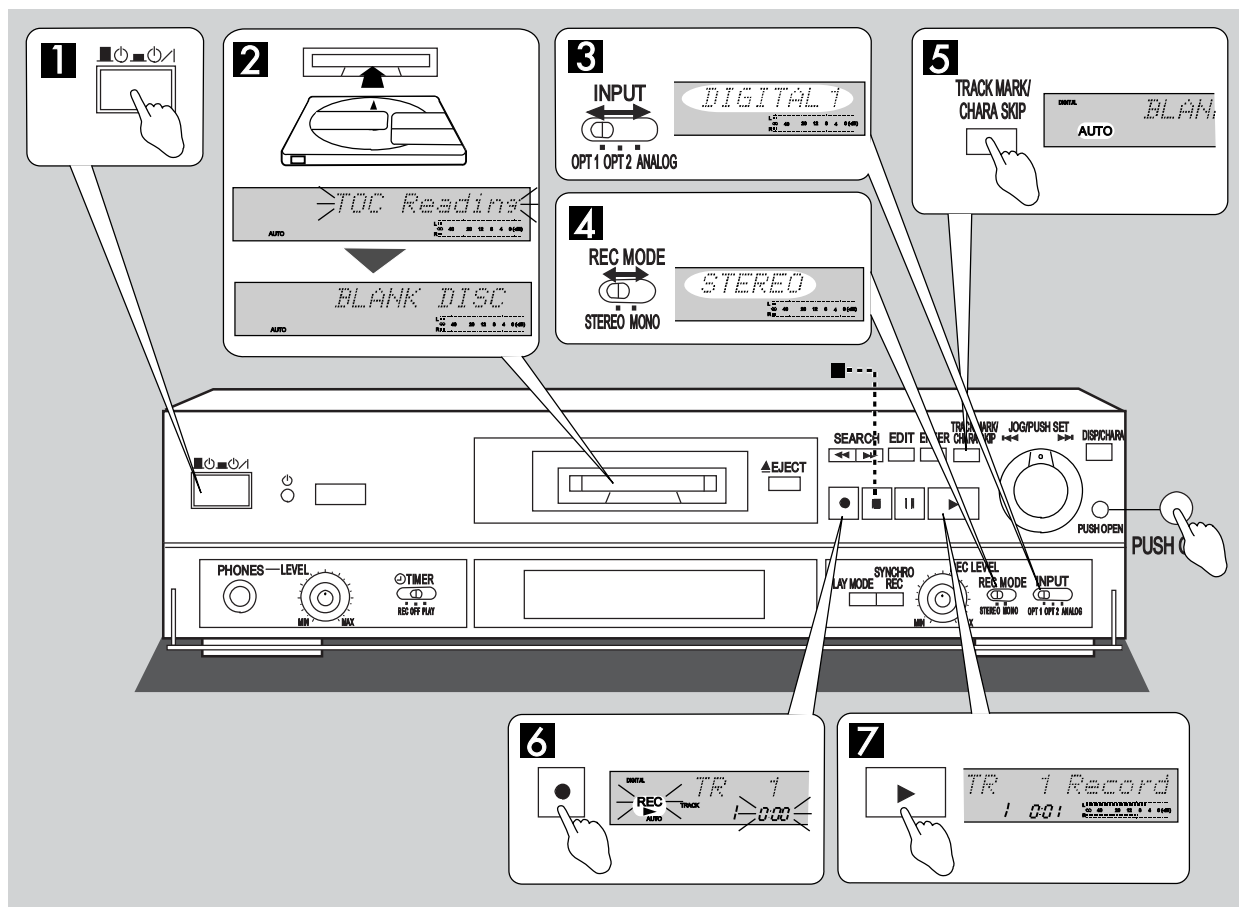
The transparent panel is open in all explanations in this manual.



Remote control

No.	Name	No.	Name
①	Unit on/off button () Use this button to turn the unit on and off when the unit's [/] button is on ().	⑫	Scroll button (SCROLL)
②	Numeric buttons (1 - 0, ≥ 10)	⑬	Display select button (DISPLAY)
③	Program button (PROGRAM)	⑭	Track mark select button (TRACK MARK)
④	Program clear button (CLEAR)	⑮	Recall button (RECALL)
⑤	A-B repeat button (A-B REPEAT)	⑯	Synchro-record button (SYNCHRO REC)
⑥	Repeat button (REPEAT)	⑰	Random play button (RANDOM)
⑦	Editing mode button (EDIT)	⑱	Eject button (EJECT)
⑧	Enter button used in editing (ENTER)	⑲	Skip buttons (SKIP)
⑨	Search buttons (SEARCH)	⑳	Pause button ()
⑩	Record button (REC)	㉑	Playback/recording start button ()
⑪	Stop button ()		

Basic Recording Operations



Before operation

Turn on the unit you are recording from and prepare it for play.

1 Press [].

2 Insert the MD for recording.

The MD is pulled into the unit after it is pushed in part of the way. The message "TOC Reading" flashes on the display and then any text information about the disc is shown.

3 Select the input terminals to be used with [INPUT].

OPT 1: When using DIGITAL OPTICAL IN 1 terminal
OPT 2: When using DIGITAL OPTICAL IN 2 terminal
ANALOG: When using ANALOG IN terminal

4 Select the recording mode with [REC MODE].

STEREO: This is the normal recording mode.
MONO: Twice the amount of material can be recorded in this mode, compared to the STEREO mode.

5 Select the marking mode with [TRACK MARK/CHARA SKIP].

Each time the button is pressed: AUTO ↔ off
AUTO: Track marks are automatically inserted.
Off: If track marks are unnecessary or when you want to insert them manually.

6 Press [].
The unit goes to recording standby.

If you selected ANALOG in step 3:
Adjust the recording level.

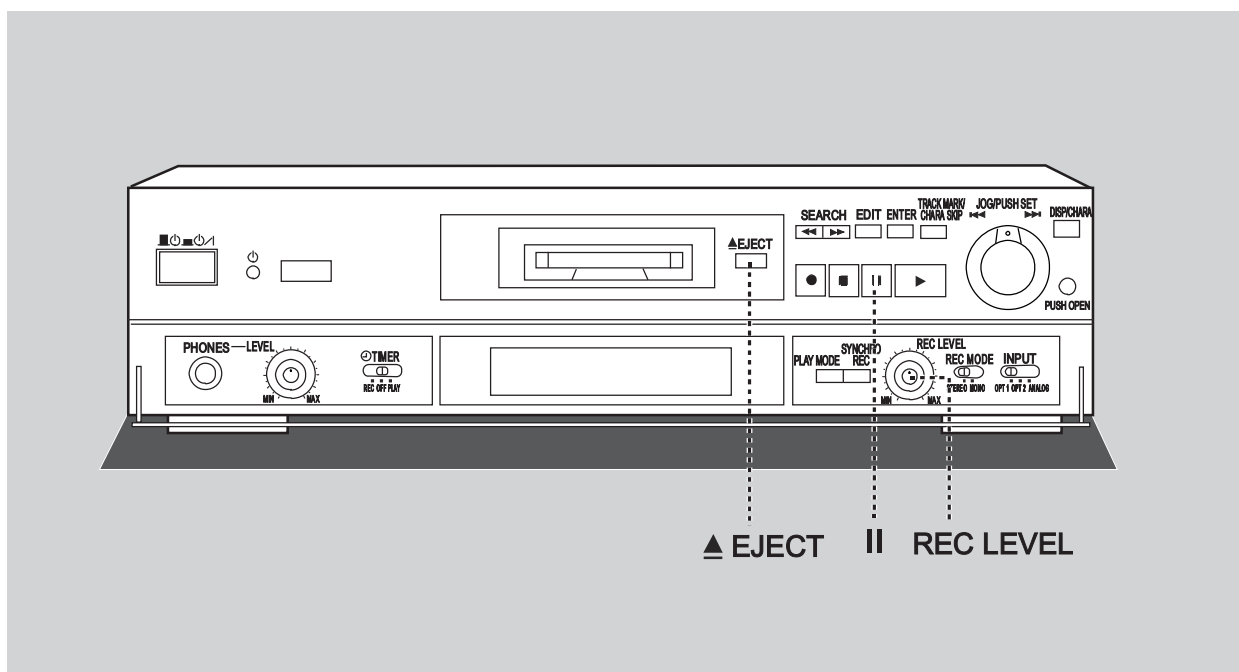
7 Press [] to start recording and start play back of the sound source.

To stop recording

Press [].
Recording has finished when the message "UTOC Writing" disappears from the display.

Note

- The recording and marking modes and the input source cannot be changed while recording.
- Do not turn the unit off or eject the disc while "UTOC Writing" is still on the display. This can cause the recording to be erased and damage to the disc.



To pause recording

Press [||].

A track mark is added if the marking mode has been set to AUTO. Press again to resume recording.

To eject the MD

Press [▲ EJECT].

Note

Recording starts from where the last recording ended so it is not necessary to look for a blank section.

You cannot record over tracks.

If a track is no longer required and you need to make space on the disc, use the editing functions.

Your attention is drawn to the fact that recording pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

Digital recording

Input through OPT 1 or OPT 2 will result in digital recording. This unit has a sampling rate converter.

This enables you to record sound from satellite and cable tuners (32 kHz and 48 kHz).

The message "UNLOCK" is displayed if the source equipment is not connected correctly or it isn't on.

The number of times you can record and re-record digital material is limited.

Recording level adjustments are made automatically.

Auto tracking

When set to AUTO, track marks are inserted as they are received from a digital source, or after three seconds of silence when analog recording.

Track marks may not be inserted correctly while analog recording in the following cases:

If the space between tracks is short;

If there is noise between tracks;

If there are parts of the track that play at an extremely low level;

If recording is started partway through a track (the first silent section after recording begins is not registered).

Use the editing functions after recording is finished to correct the track marks.

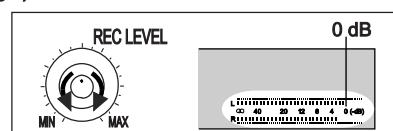
How to adjust the recording level

Necessary when recording is analog

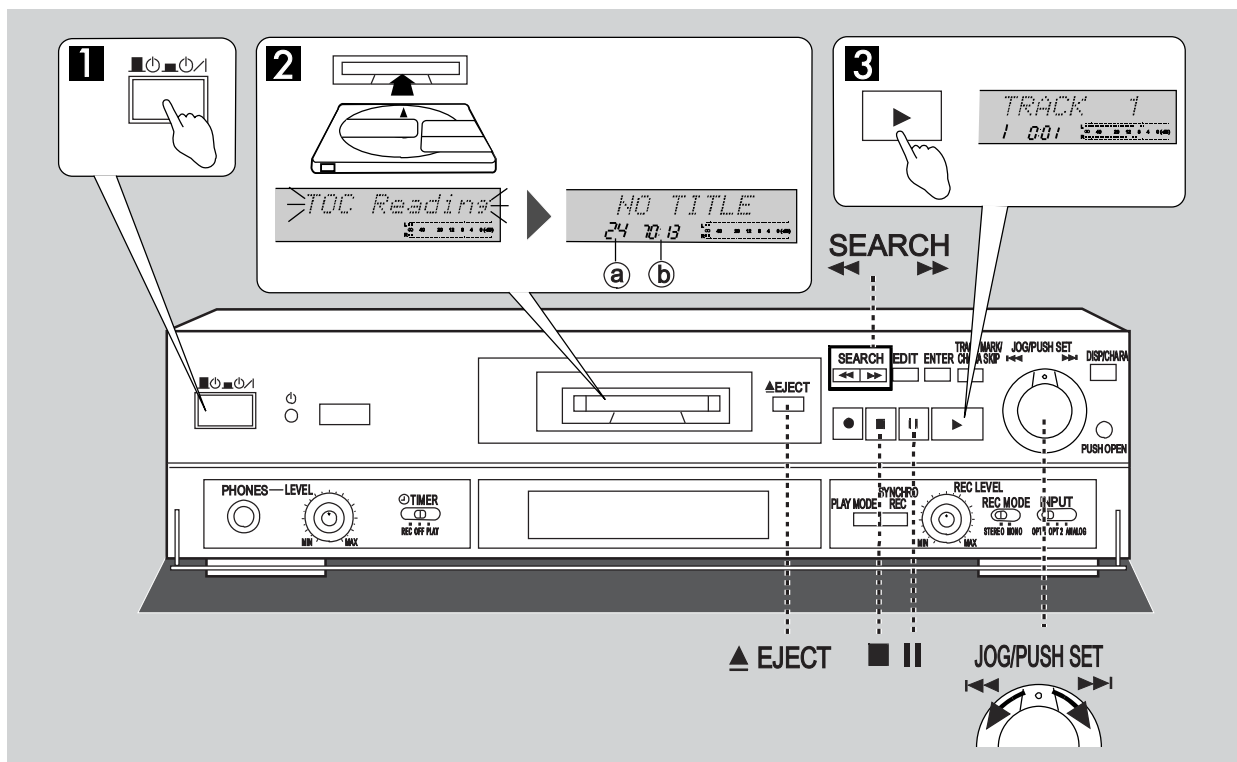
① Playback the source to be recorded.

② Turn [REC LEVEL] to select the right level.

Set the dial so that highest level on the source pushes the peak level meters just up to 0 dB. (A red indicator lights if the level is too high.)



③ Stop the source.
Now begin recording



- 1** Press [].
The unit comes on.

- 2** Insert the MD.
The MD is pulled into the unit after it is push in part of the way.
The message "TOC Reading" flashes on the display and then any text information about the disc is shown.
Ⓐ Total number of tracks
Ⓑ Total play time

- 3** Press [].

To skip tracks	backward forward
To find a specific point	backward forward The disc is played at high speed until the button is released.

To stop play

Press [].

To pause play

Press [].

Press again to resume play.

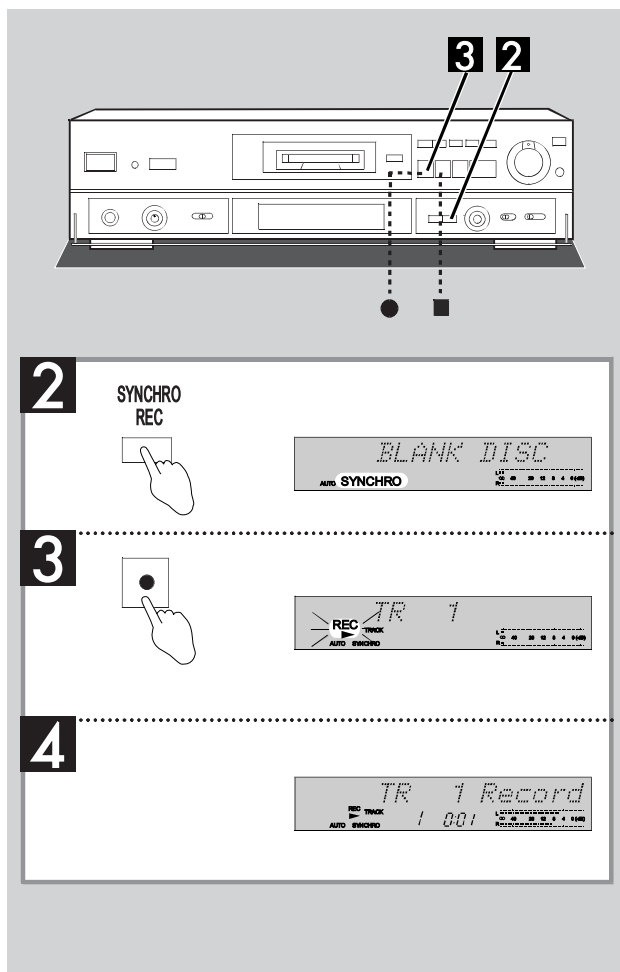
To eject the MD

Press [EJECT].

Reference

The unit automatically plays stereo and monaural MDs.

■ Functions to Assist Recording



Synchronized recording

Recording starts as soon as sound input is detected.

- 1** Insert an MD, select the source, recording and marking modes.

If you have selected analog input, press [●], adjust the recording level and press [■].

- 2** Press [SYNCHRO REC].
"SYNCHRO" appears on the display.

- 3** Press [●].
The unit goes to recording standby.

- 4** Start playback of the source.
Recording starts as soon as sound is detected.

To stop recording

Press [■].

Recording has finished when the message "UTOC Writing" disappears from the display.

To pause recording

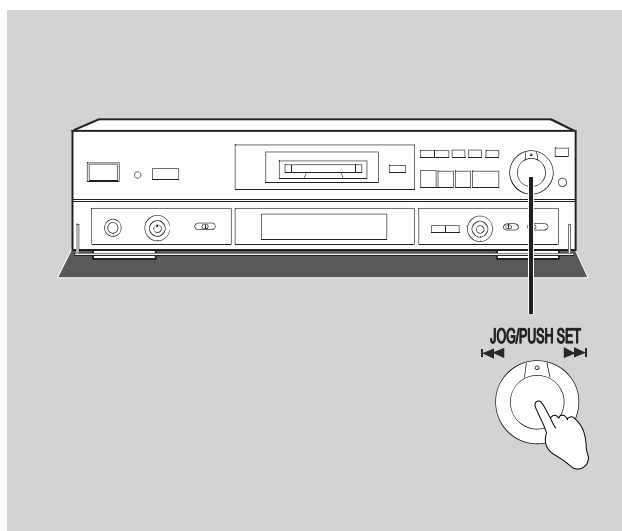
Pause or stop the sound source and this unit pauses after 4 seconds of silence. Recording resumes when the source is stated again. [■] on this unit doesn't work while this function is on.

This unit is paused when playback is finished.

Press [■] to cancel the function.

Note

Recording quality can be affected if a track begins with extremely low volume or if there are almost silent parts during the track. Do not use this function if the source you are recording contains such tracks. (Track marks can be added with the editing function after recording.)



Adding track marks during recording

Add track marks where you want.

During recording

Press [JOG/PUSH SET].

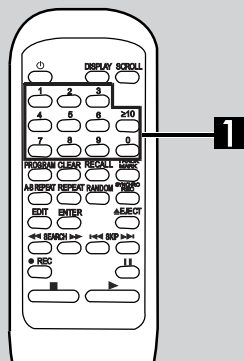
A track mark is added each time the button is pressed and the number of tracks increases.

Reference

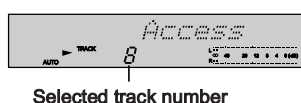
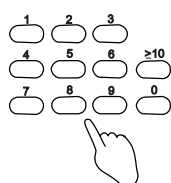
Up to 254 track marks can be inserted.

Other Playback modes

A

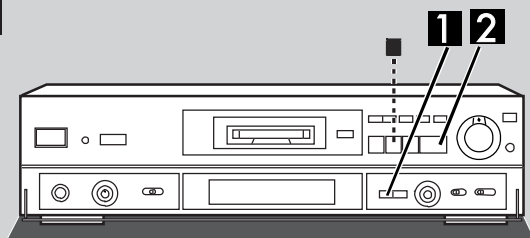


1



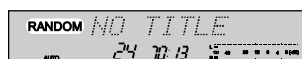
Selected track number

B

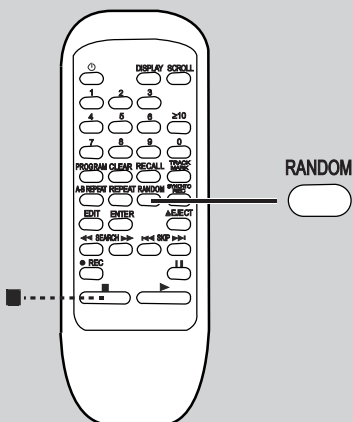


1

PLAY MODE



2



Direct play (remote control only)

A

Enter a number to play a track.

Either while stopped or during play

1 Press the numeric buttons.

The selected track starts playing.

Play then continues to the final track.

To select a track numbered 1 to 9

Press the corresponding numeric button.

To select a two digit number (10 to 99)

First press ≥ 10 then the corresponding numeric buttons.

e.g. Track 10: ≥ 10 → [1] → [0]

To select a three digit number (100 to 254)

First press ≥ 10 twice then the corresponding numeric buttons.

e.g. Track 235: ≥ 10 → ≥ 10 → [2] → [3] → [5]

Random play

B

Randomly plays all the tracks on the MD.

On the main unit

While stopped

1 Press [PLAY MODE] so "RANDOM" appears on the display.

Each time the button is pressed: PRGM → RANDOM → off

2 Press [▶].

All tracks play once each in random order.

On the remote control

While stopped

Press [RANDOM].

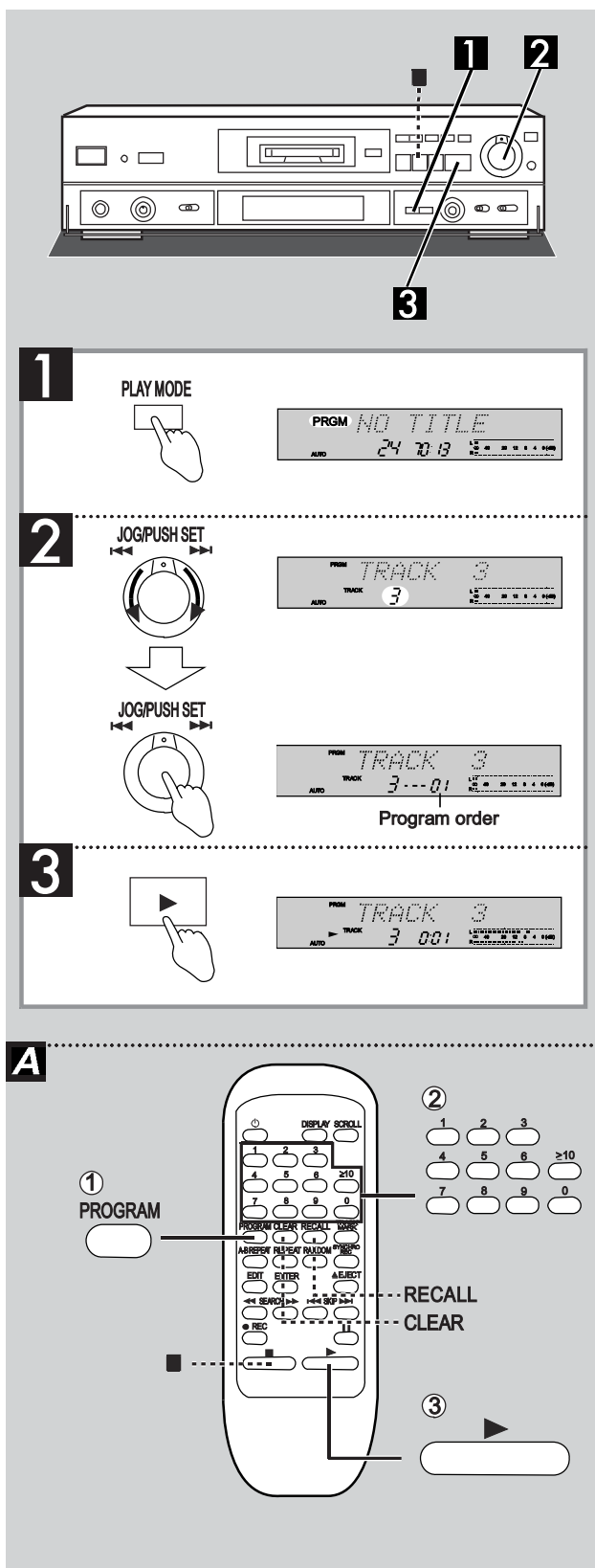
Random play begins immediately.

To cancel random play

Press [■]. (Press twice if the unit is playing.)

Note

During random play, you cannot skip back to tracks that have been played, or search backward or forward between tracks.



Program play

This function allows you to playback up to 24 tracks in a selected order.

On the main unit
While stopped

1 Press [PLAY MODE] so "PRGM" appears on the display.
Each time the button is pressed: PRGM → RANDOM → off

2 Turn [JOG/PUSH SET] then press when the required track number appears on the display.
Repeat this step to program all the required tracks in order.

"FULL" appears on the display when there is no space left in the program.

3 Press [▶].
The selected program begins.

On the remote control A

While stopped

- ① Press [PROGRAM].
- ② Select the tracks in the required order with the numeric buttons.
- ③ Press [▶].

To cancel program play

Press [■]. (Press twice if the unit is playing.)

"CLEAR" appears on the display for a second and "PRGM" is cleared.

The programmed contents are also cleared.

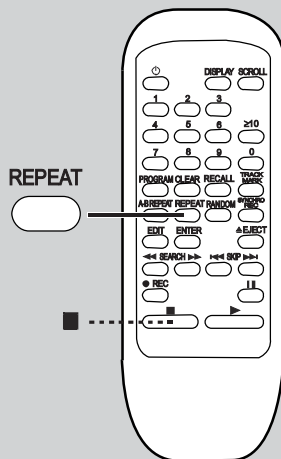
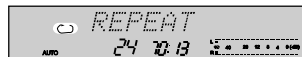
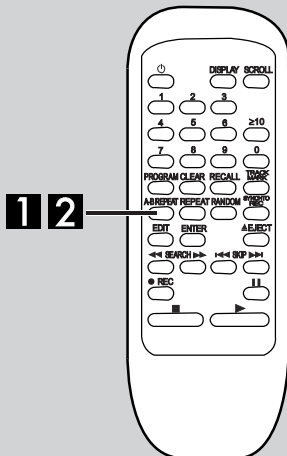
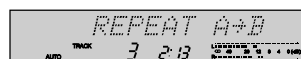
Note

The program remains intact even if the unit is turned off and on again.

To clear particular tracks from the program (remote control only)

1. Press [RECALL] successively until the track to be cleared appears on the display.
2. Press [CLEAR] while "RECALL" is on the display.
"CLEAR" appears on the display and the track is removed from the program.

It is not necessary to press [RECALL] if you want to clear the last track from the program. The last track is removed each time [CLEAR] is pressed.

A**REPEAT****B****1 2****1****A-B REPEAT****2****A-B REPEAT**

Repeat play (remote control only)

Repeating one or all of the tracks **A**

Press [REPEAT] so either "⏮" or "1-⏮" appears on the display.

Each time the button is pressed: ⏮ → 1-⏮ → off

⏮ : all tracks played repeatedly

This mode also functions during random and program play.

Press [REPEAT] so "⏮" appears on the display before or after play is started.

1-⏮ : one track played repeatedly

If activated during play, the current track is played repeatedly.

If activated before play, the first track is played repeatedly after play starts.

Select another track by skipping or selecting it directly with the numeric buttons.

Canceling repeat play

Press [■]. (Press twice if unit is playing.)

The mode is also cleared if [REPEAT] is pressed to clear "⏮" or "1-⏮" from the display.

Repeating a particular section - A-B repeat **B**

During play

1 Press [A-B REPEAT] at the point repeating is to start.

2 Press [A-B REPEAT] again at the point repeating is to finish.

The chosen section plays repeatedly.

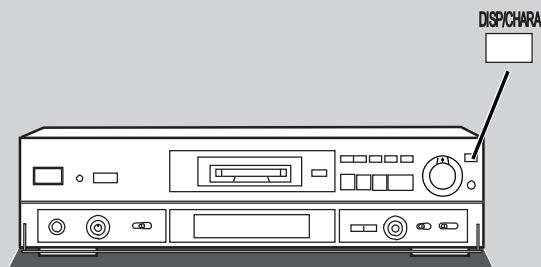
To cancel A-B repeat

Press [A-B REPEAT].

It is also cleared if play is stopped.

Convenient Functions

A



Changing the display

A

Press [DISP/CHARA].

Different information appears on the display each time the button is pressed. The information shown depends on the condition of the unit.

Example

During play

- ① Name of track and elapsed time
- ② Track number and remaining time

While recording

- ① Track number and elapsed time for that track
- ② Remaining time on MD

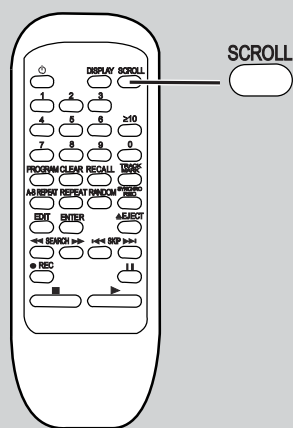
While stopped

- ① Title of disc, total number of tracks and total play time of the disc
- ② Remaining available time on the disc

Reference

Text over 12 letters long scrolls whenever that display is returned to.

B



Scrolling the display (remote control only)

B

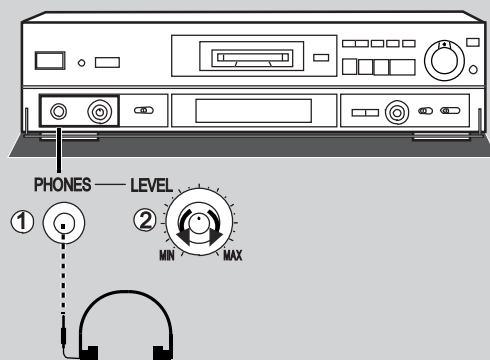
When the title of a disc or the names of tracks are too long to fit on the display at one time, the unit automatically scrolls that information across the screen once when the information is first accessed. This operation allows you to see the information in full again.

While the disc title or track name are being displayed

Press [SCROLL]

The information scrolls from right to left across the display.

C



Using headphones

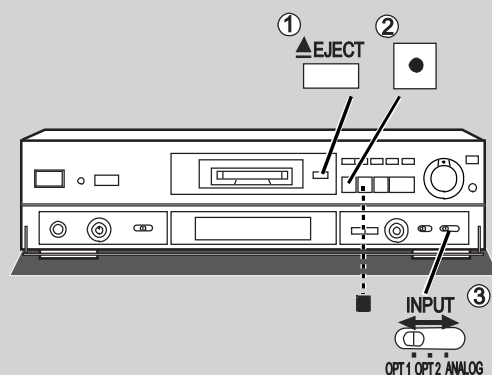
C

- ① Plug the headphones (not included) into the [PHONES] jack.
Plug type: Large stereo
- ② Turn [LEVEL] to adjust the volume.

Note

Avoid listening for prolonged periods of time to prevent hearing damage.

D



Monitor function

D

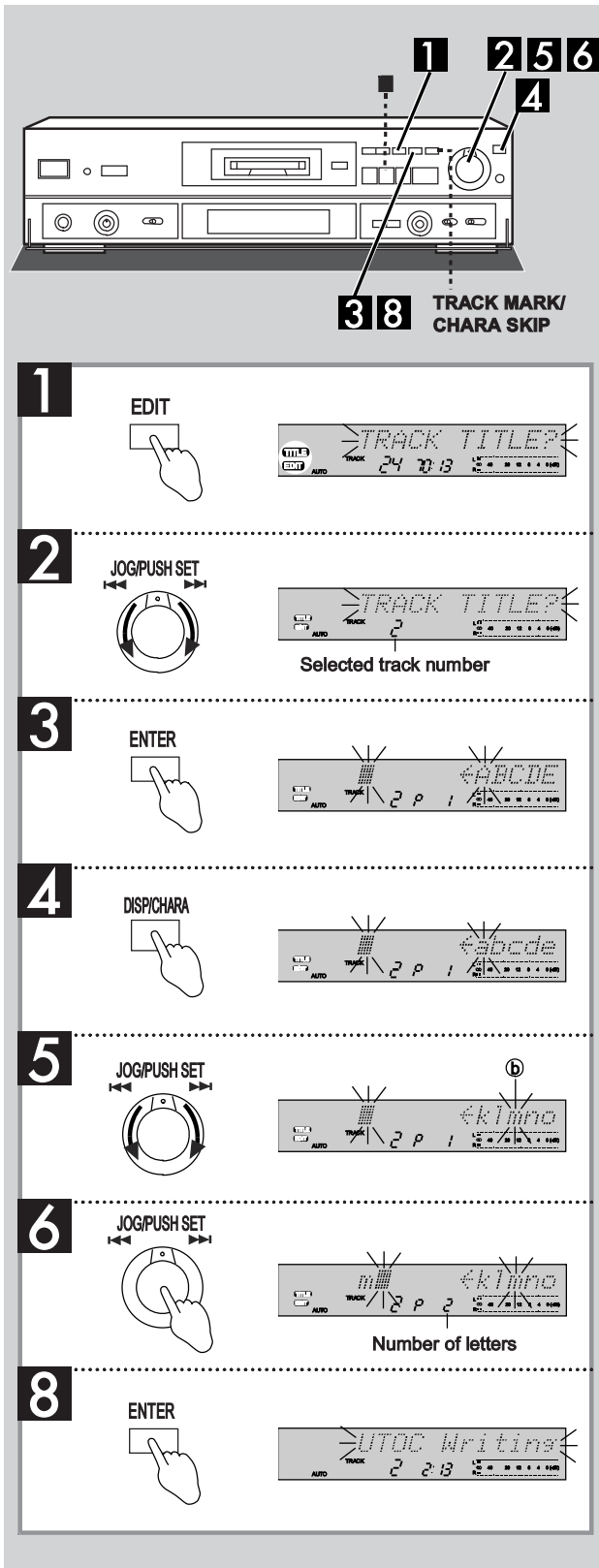
Input from units connected to this unit's input terminals can be sent to units connected to this unit's output terminals.

The signal is output through the OPTICAL OUT and ANALOG OUT terminals. This unit converts digital and analog signals automatically so you can, for example, send digital input directly to an analog amplifier.

- ① Press [▲ EJECT] if an MD is in the unit. (This function will not work if an MD is in the unit.)
 - ② Press [●]. ("Monitor" appears on the display.)
 - ③ Select the source with [INPUT].
- Begin play on the selected source and the sound is output automatically.

Press [■] to cancel.

■ Editing MDs



Titling tracks and discs

Each title can have up to 100 letters.
A single MD can hold about 1700 letters worth of text information.
You can not add titles to prerecorded MDs.

Make sure the disc is record enabled.

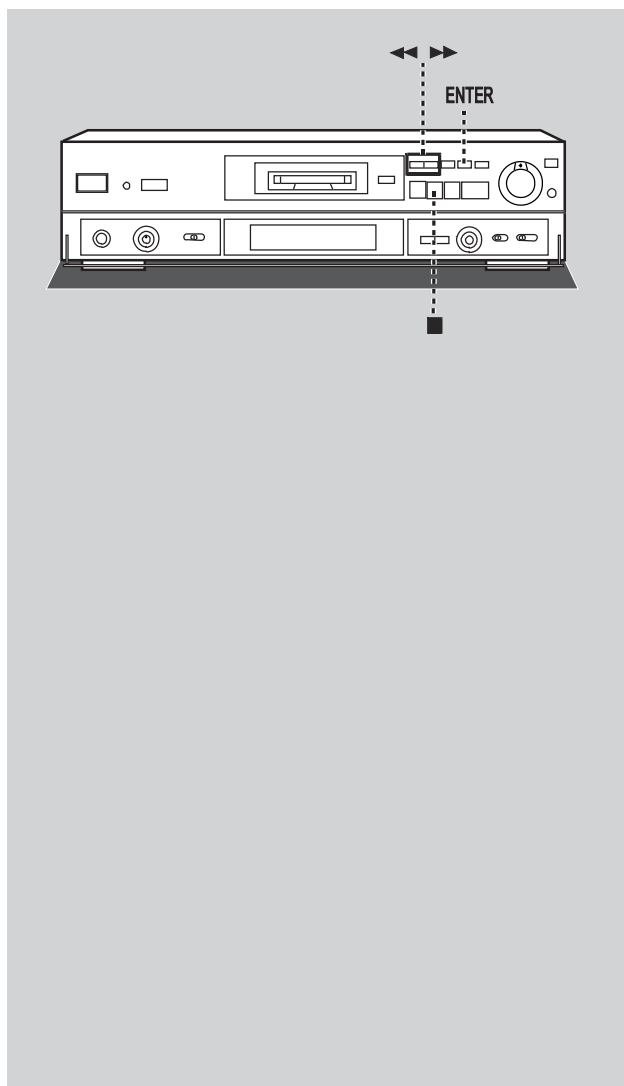
While stopped

- 1** Press [EDIT] to select "TRACK TITLE?" or "DISC TITLE?"
Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display
- 2** When titling a track
Turn [JOG/PUSH SET] to select the track.
- 3** Press [ENTER].
The text input mode is activated.
- 4** Press [DISP/CHARA] to select the kind of text.
Each time the button is pressed: CAPITALS/symbols → lower case/symbols → numerals
- 5** Turn [JOG/PUSH SET] to select the letter (ⓐ).
Five letters are shown on the right hand side of the display at one time.
Turn [JOG/PUSH SET] or press [TRACK MARK/CHARA SKIP] to show the next group of five letters.
- 6** Press [JOG/PUSH SET].
The selected letter is now shown on the left hand side of the display and the cursor marks the place where the next character will go.
- 7** Repeat steps 4, 5 and 6 to complete the title.
- 8** Press [ENTER].
"UTOC Writing" appears on the display.
When this message disappears the title has been entered.

Stopping part way through

After step 1 or 2: Press [■].

After steps 3 to 7: Press [EDIT] then [■].



Characters available for titles

Text mode	Character
CAPITALS / symbol	ABCDE FGHIJ KLMNO PQRST UVWXY Z space!"#\$ %&' () *+ , - . / : ; < = > ? @ _ '
lower case / symbol	abcde fg hij klmno pqrst uvwxy z space!"#\$ %&' () *+ , - . / : ; < = > ? @ _ '
Numerals	0 1 2 3 4 5 6 7 8 9

Editing text

Press [◀◀] or [▶▶] to move the cursor.

Erasing letters

Move the cursor so it covers the letter to be erased and press [■].
The letter is erased and the other letters move to fill the space.

Inserting a letter or space

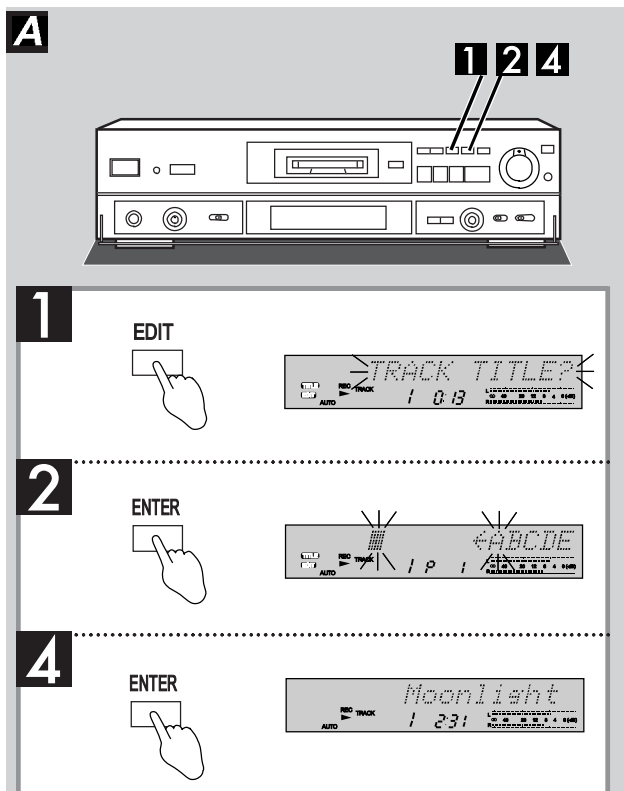
Move the cursor to the letter to the right of the place where the new letter or space is to go.
Now select and enter the new letter with [JOG/PUSH SET].

Changing letters

- ① Erase the old letter.
- ② Insert the new letter.

Making corrections to a title

- ① Select the title to be corrected
- ② Use the above editing techniques to correct the title.
- ③ Press [ENTER].



Titling a track being recorded **A**

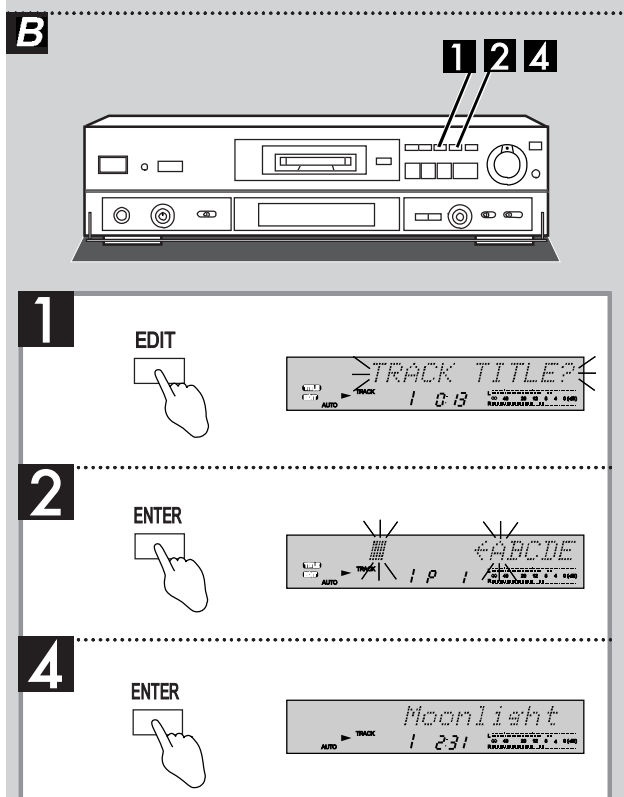
While recording is in process

- 1 Press [EDIT].**
"TRACK TITLE?" appears on the screen.
- 2 Press [ENTER].**
- 3 Enter the title.**
This can be continued even if the track changes during recording.
- 4 Press [ENTER].**
The previous display is restored and the title is displayed.

The title is entered after recording finishes and "UTOC Writing" disappears from the display.

To cancel part way through

Press [EDIT] until the normal display is restored.



Titling a track being played **B**

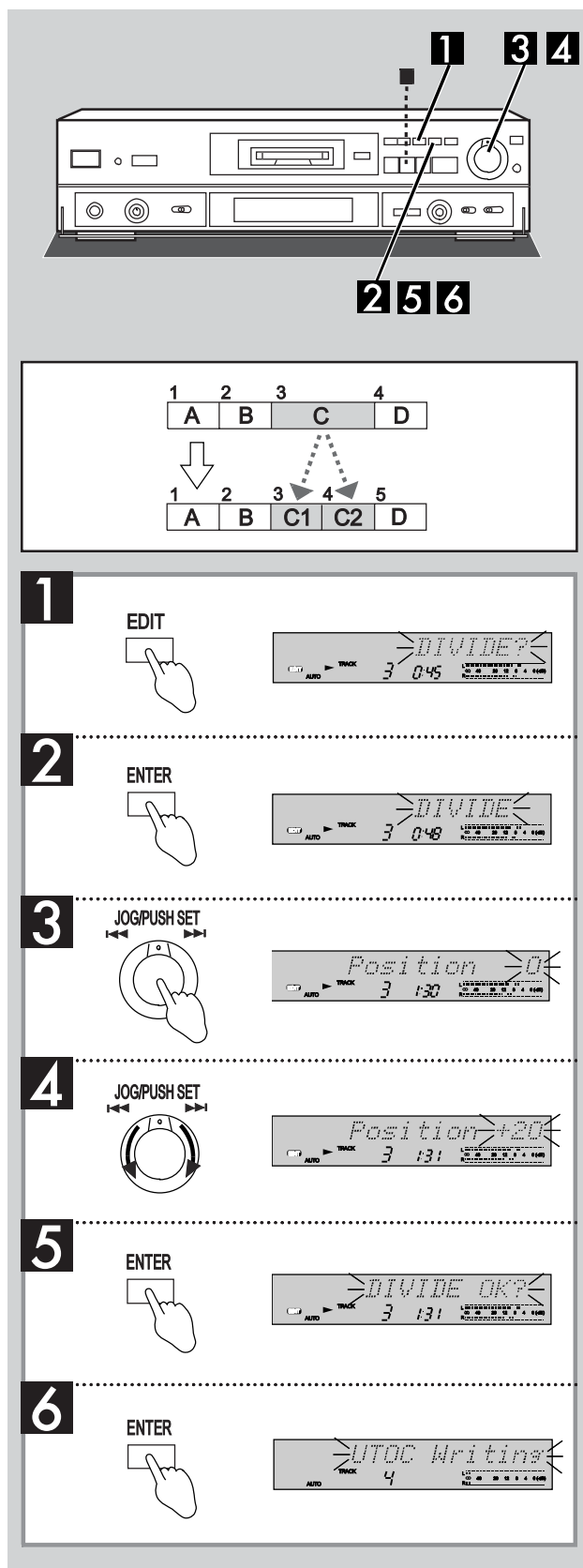
While track is playing

- 1 Press [EDIT] to select "TRACK TITLE?".**
Each time the button is pressed: TRACK TITLE? → DIVIDE? → MOVE? → COMBINE? → TRACK ERASE? → current display
- 2 Press [ENTER].**
- 3 Enter the title.**
The track is played repeatedly.
- 4 Press [ENTER].**
The previous display is restored and the title is displayed.

The title is entered after play stops and "UTOC Writing" disappears from the display.

To cancel part way through

Press [EDIT] until the normal display is restored.



Dividing tracks - DIVIDE

This function allows you to manually add track marks. This means you can edit a radio program you recorded, or divide symphony into its separate movements.

Make sure the disc is record enabled.

While the track you want to divide is playing

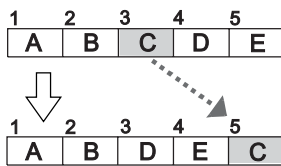
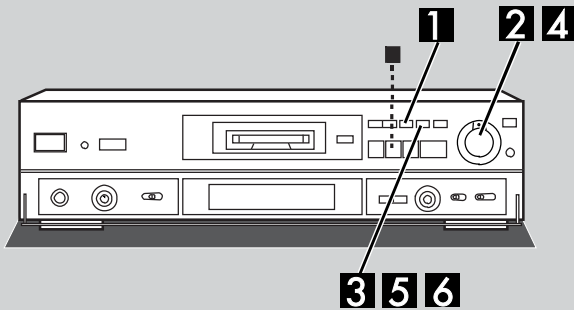
- 1 Press [EDIT] to select "DIVIDE?"**
Each time the button is pressed: TRACK TITLE? → DIVIDE? → MOVE? → COMBINE? → TRACK ERASE? → current display
- 2 Press [ENTER].**
If the point you want to put the track mark at has already gone past, turn [JOG/PUSH SET] to return to the beginning of the track.
You can also select a different track at this point.
- 3 At the point you want to add the track mark: Press [JOG/PUSH SET].**
A four second segment of the track, beginning at the select point, is played repeatedly.
- 4 Turn [JOG/PUSH SET] adjust the point.**
Adjustment can be made between -128 and +127, approximately 8 seconds either side of the original point.
- 5 Press [ENTER].**
"DIVIDE OK?" appears on the display.
If you wish to cancel press [■] now.
- 6 Press [ENTER].**
"UTOC Writing" appears on the display.
When this message disappears the track mark has been entered.
Play stops.

Stopping part way through
Press [■].

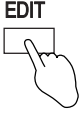
To remove the dividing track mark
Use the combine function.

Note

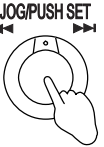
If a titled track is divided, the latter half becomes untitled. There is no interruption to sound even if a track mark is added.



1

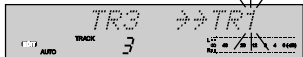



2

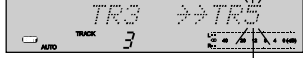



Selected track number

3

4

New track number

5




6




Moving tracks - MOVE

This function allows you to permanently change the order tracks are played in.

Make sure the disc is record enabled.

While stopped

- 1** Press [EDIT] to select "MOVE?"
Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display
- 2** Turn [JOG/PUSH SET] select the track to be moved.
- 3** Press [ENTER].
- 4** Turn [JOG/PUSH SET] select the position (track number) the track is to be moved to.
To move the track to position 5, track number "5" should be on the display.
- 5** Press [ENTER].
A message confirming your selection appears on the display. If you wish to cancel press [■] now.
- 6** Press [ENTER].
The move is confirmed after "UTOC Writing" disappears from the display.

To move a track while it is being played

This is useful when you want to make sure of the track you are moving.

While playing the track to be moved.

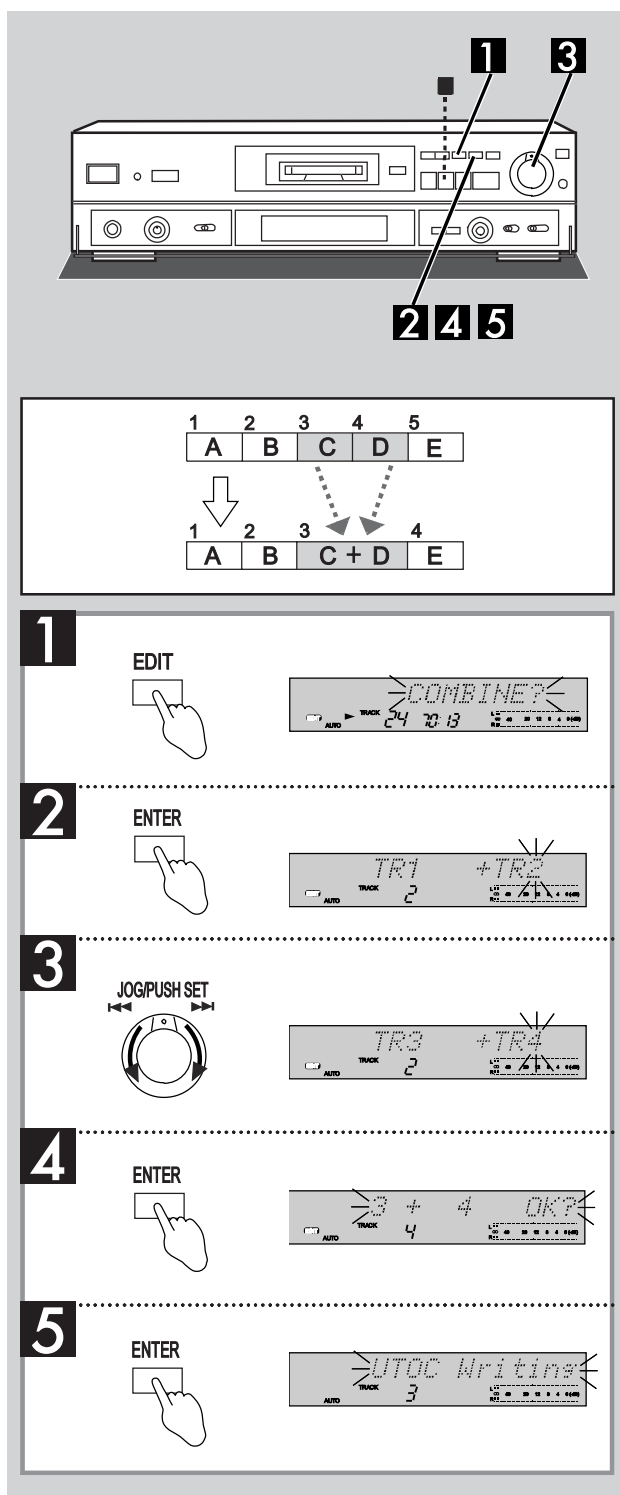
- ① Press [EDIT] to select "MOVE?"
Each time the button is pressed: TRACK TITLE? → DIVIDE? → MOVE? → COMBINE? → TRACK ERASE? → current display
- ② Press [ENTER].
- ③ Turn [JOG/PUSH SET] select the position (track number) the track is to be moved to.
- ④ Press [ENTER] twice.
The move is confirmed after "UTOC Writing" disappears from the display and play stops.

To cancel part way through

Press [■].

To return the track to its original position

Repeat the above steps, selecting the track's original position in step 4.



Combining tracks - COMBINE

This function removes a track mark so the two tracks either side of it effectively become one track.
This is useful to remove track marks that were unnecessarily added during recording.

Make sure the disc is record enabled.

While stopped

- 1** Press [EDIT] to select "COMBINE?"
Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display
- 2** Press [ENTER].
- 3** Turn [JOG/PUSH SET] select the two tracks to be combined.
- 4** Press [ENTER].
A message confirming your selection appears on the display.
If you wish to cancel press [■] now.
- 5** Press [ENTER].
"UTOC Writing" appears on the display.
When this message disappears the track mark has been erased.

Combining tracks during play

This is useful to confirm the tracks you want to combine.

While playing the latter track

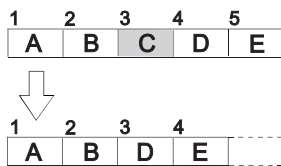
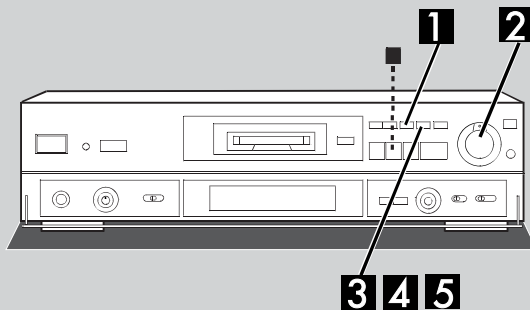
- ①** Press [EDIT] to select "COMBINE?"
Each time the button is pressed: TRACK TITLE? → DIVIDE? → MOVE? → COMBINE? → TRACK ERASE? → current display
- ②** Press [ENTER] three times.
"UTOC Writing" appears on the display.
When this message disappears the track mark has been erased.
Play stops.

To cancel part way through
Press [■].

To divide the tracks again
Use DIVIDE.

Note

A track recorded in stereo mode and a track recorded in mono mode cannot be combined.
If the two tracks both had titles, only the title of the first track remains after they are combined.



1

EDIT

ERASE
TRACK

TRACK ERASE?

24
70:13

2

JOG/PUSH SET

ERASE
TRACK

TRACK ERASE?

3
40:7

3

ENTER

ERASE
TRACK

Remain Time

3
66:06

Available time

4

ENTER

ERASE
TRACK

ERASE OK?

3

5

ENTER

ERASE
TRACK

UTOC Writing

3

Erasing tracks

Unneeded tracks can be erased and the available recording time can be increased.

Make sure the disc is record enabled.

While stopped

- 1 Press [EDIT] to select "TRACK ERASE?"**
Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display
- 2 Turn [JOG/PUSH SET] select the track to be erased.**
- 3 Press [ENTER].**
The amount of recording time available after the track is erased is shown on the display.
- 4 Press [ENTER].**
A message confirming your selection appears on the display. If you wish to cancel press [■] now.
- 5 Press [ENTER].**
"UTOC Writing" appears on the display. When this message disappears the track has been erased.

Erasing a track while it is being played

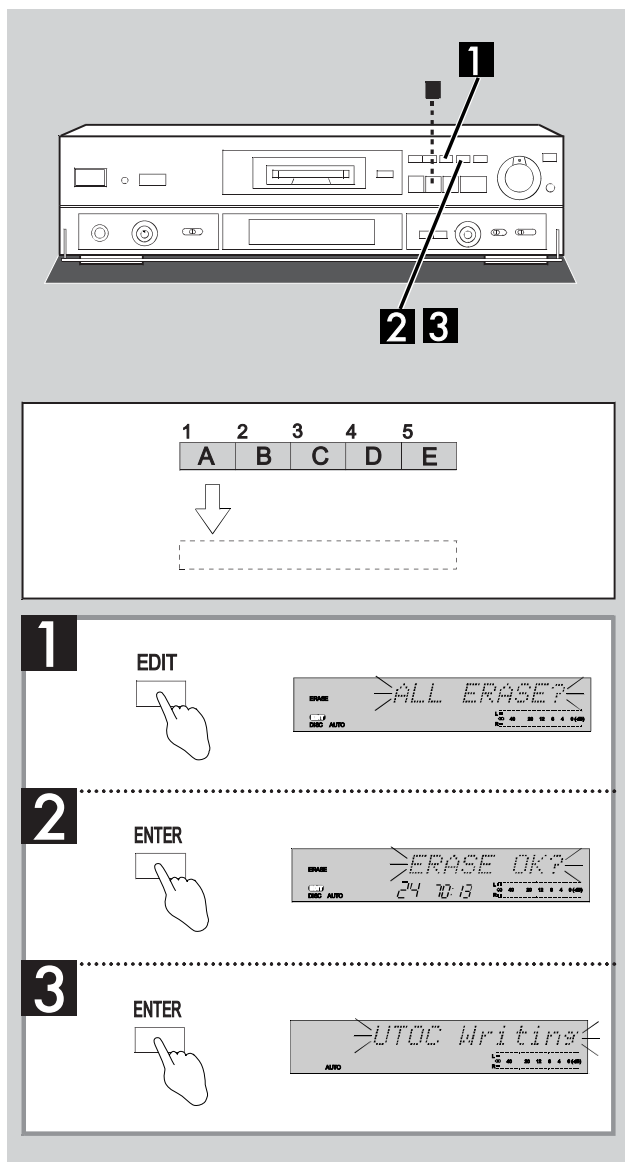
This is useful to check that the right track is erased.

While the track to be erased is being played.

- ① Press [EDIT] to select "TRACK ERASE?"
Each time the button is pressed: TRACK TITLE? → DIVIDE? → MOVE? → COMBINE? → TRACK ERASE? → current display
- ② Press [ENTER] three times.
"UTOC Writing" appears on the display. When this message disappears the track has been erased. Play stops.

To cancel part way through

Press [■]



Erasing an entire MD

This operation creates a blank disc.

Make sure the disc is record enabled.

While stopped

1 Press [EDIT] to select "ALL ERASE?"
Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display

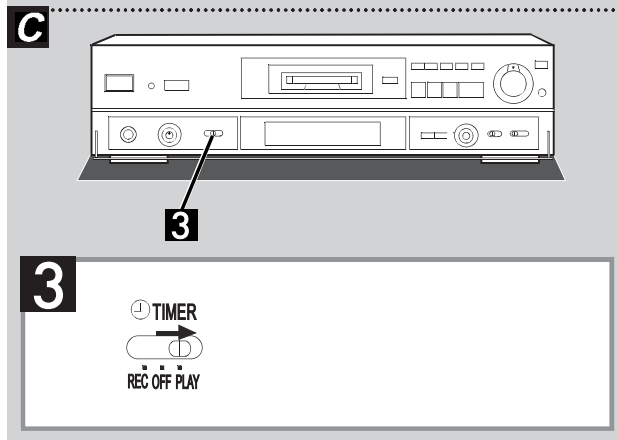
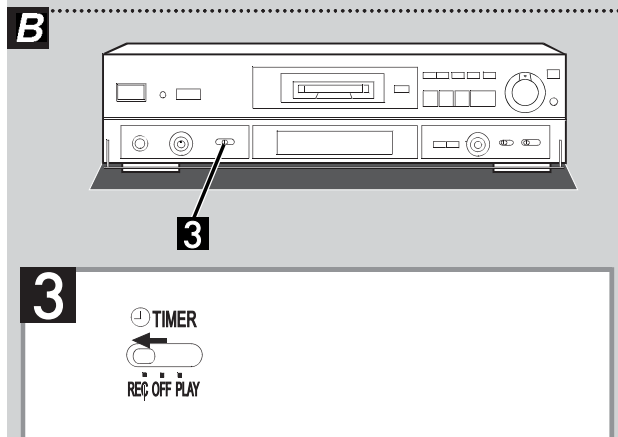
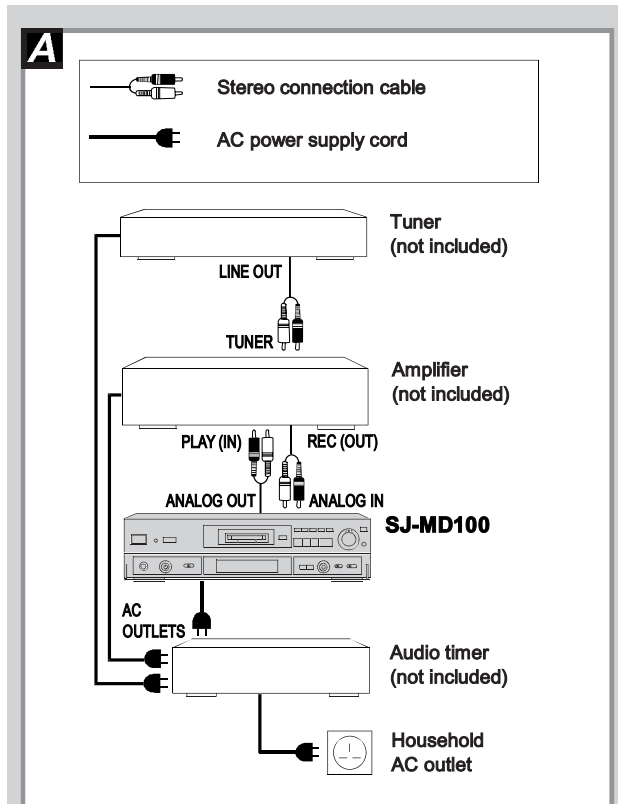
2 Press [ENTER].
A message confirming your selection appears on the display. If you wish to cancel press [■] now.

3 Press [ENTER].
"UTOC Writing" appears on the display. When this message disappears the MD has been erased.

To cancel part way through

Press [■]

■ Timer Recording and Playback



Use this unit in conjunction with an audio timer (not included) to record radio programs or start play a selected time. The explanations refer to the connection example in the illustration. **A** See the operating instructions of the other equipment for more information.

Timer recording **B**

First turn all the equipment on. Set the tuner and amplifier up so the radio station you want to record is played.

1 Prepare this unit for recording.

Do steps 1 to 6 on Basic Recording Operations and press [■].

2 Set the timer.

The equipment connected to the timer goes off.

Set it to come on at least 30 seconds before recording is to begin and to go off at least 30 seconds after recording is to end.

3 Select "REC" with [⌚ TIMER].

This unit comes on and starts recording when the timer comes on.

Note

There will be a small delay between the timer coming on and the start of recording.

Timer playback **C**

Turn on this unit and the amplifier and set them up so the MD you want to hear is played.

1 Insert an MD.

If you want to play particular tracks when the timer comes on, program them.

2 Set the timer.

The equipment connected to the timer goes off.

3 Select "PLAY" with [⌚ TIMER].

This unit comes on and starts playing when the timer comes on.

Note

There will be a small delay between the timer coming on and the start of play.

Important

Make sure "OFF" is selected with [⌚ TIMER] when the timer is not being used.

■ Operation Checks and Component Replacement Procedures

- NOTE**
1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
 2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
 3. Select item from the following index when checks or replacement are required.

● Contents

■ Checking Procedures for each P.C.B.

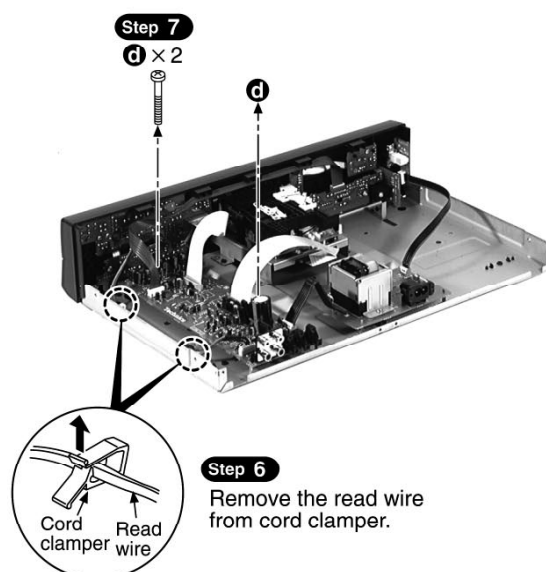
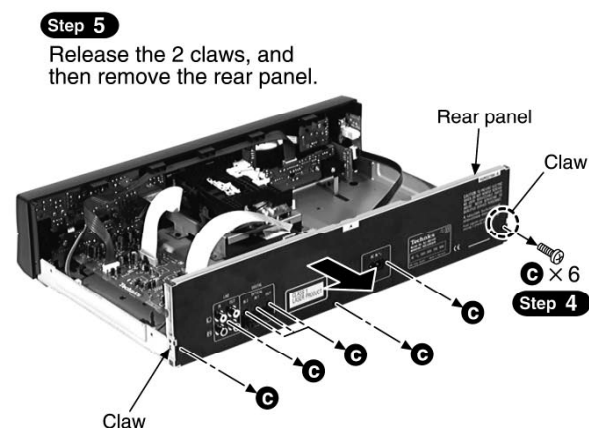
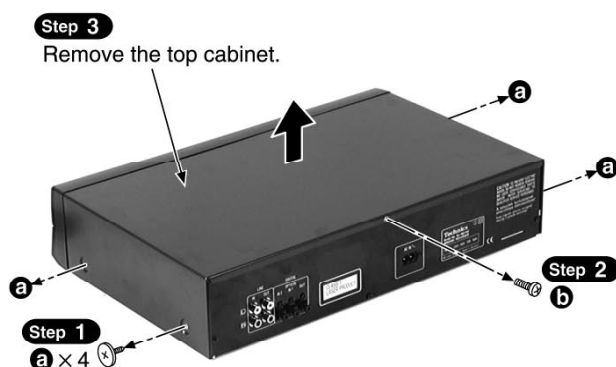
	Page.
1. Checking for the main P.C.B..	25.
2. Checking for the FL P.C.B. and operation (1) P.C.B..	26.
3. Removal of the FL P.C.B., operation (1) P.C.B. and operation (2) P.C.B..	26.
4. Removal of the power switch P.C.B. and sensor P.C.B..	27.
5. Checking for the MD servo P.C.B..	27,28.

■ Main Component Replacement Procedures

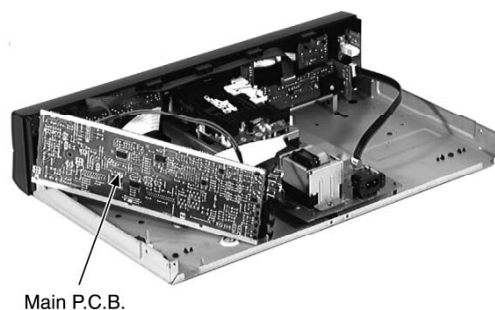
1. Replacement for the magnetic head and optical pickup.	29~31.
2. Replacement for the belt and loading motor ass'y.	31,32.
3. Replacement for the traverse motor ass'y.	32,33.

■ Checking Procedures for each P.C.B.

1. Checking for the main P.C.B.

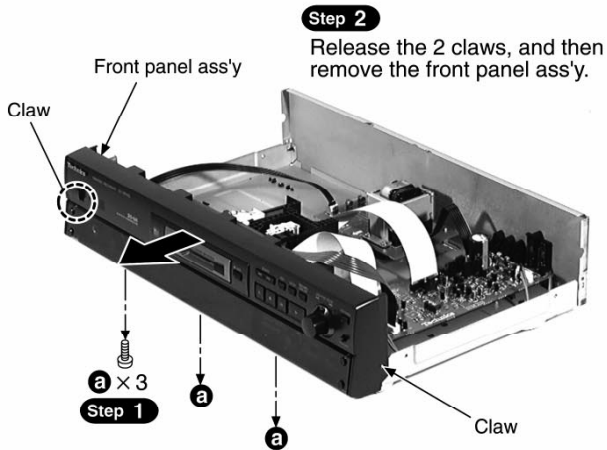


• Check the main P.C.B. as shown below.

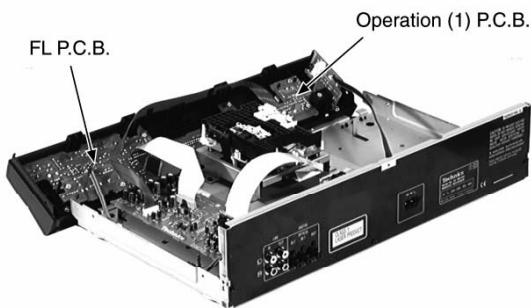


2. Checking for the FL P.C.B. and operation (1) P.C.B.

- Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 25.



- Check the FL P.C.B. and operation (1) P.C.B. as shown below.

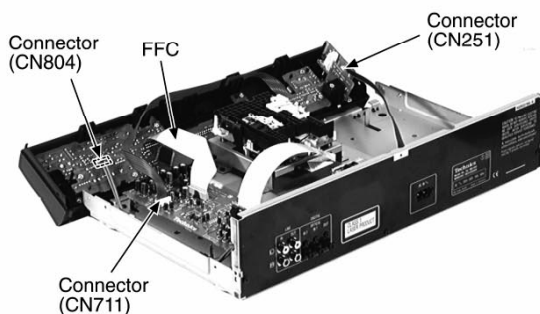


3. Removal of the FL P.C.B., operation (1) P.C.B. and operation (2) P.C.B.

- Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 25.
- Follow the **Step 1** ~ **Step 2** of the item 2 in checking procedure for each P.C.B. on page 26.

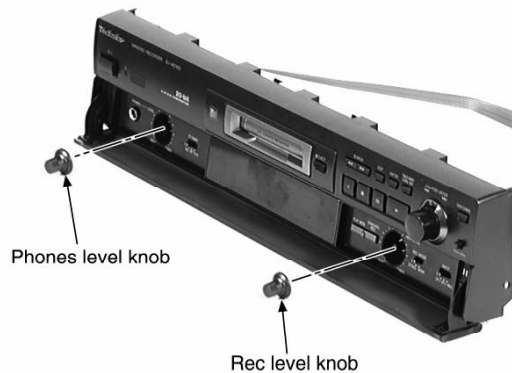
Step 1

Remove the 3 connectors and FFC.



Step 2

Remove the rec level knob and phones level knob.

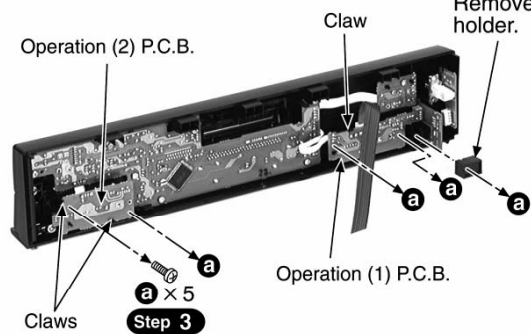


Step 4

Release the 2 claws, and then remove the operation (2) P.C.B..

Step 5

Remove the holder.

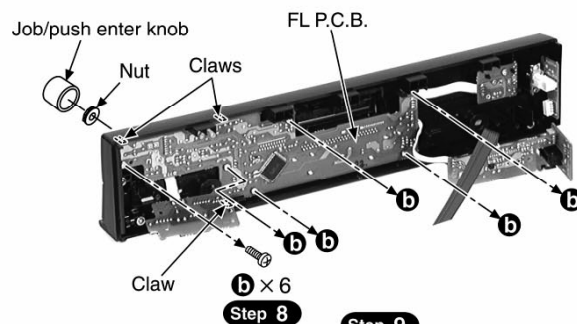


Step 6

Release the claw, and then remove the operation (1) P.C.B..

Step 7

Remove the job/push enter knob and nut.



Step 9

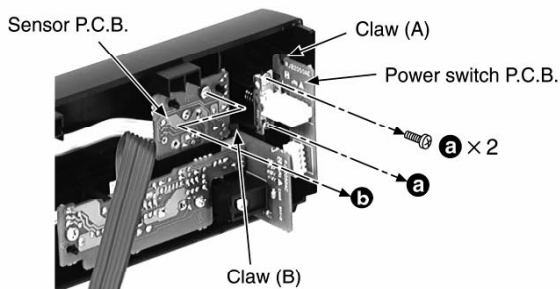
Release the 3 claws, and then remove the FL P.C.B..

4. Removal of the power switch P.C.B. and sensor P.C.B.

- Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 25.
- Follow the **Step 1** ~ **Step 2** of the item 2 in checking procedure for each P.C.B. on page 26.

Step 1

Release the 2 screws (a) and claw (A), and then remove the power switch P.C.B..



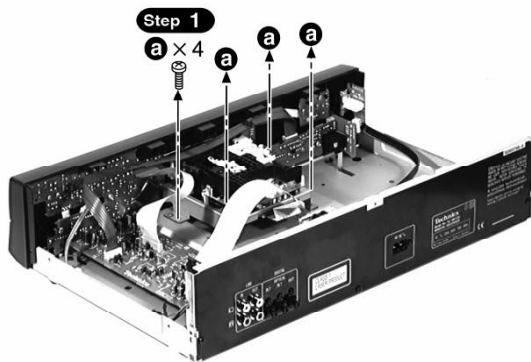
Step 2

Release the screw (b) and claw (B), and then remove the sensor P.C.B..

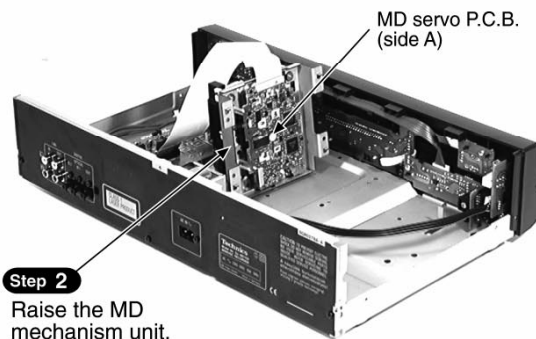
5. Checking for the MD servo P.C.B.

- Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 25.

〈Checking for the MD servo P.C.B. (side A)〉



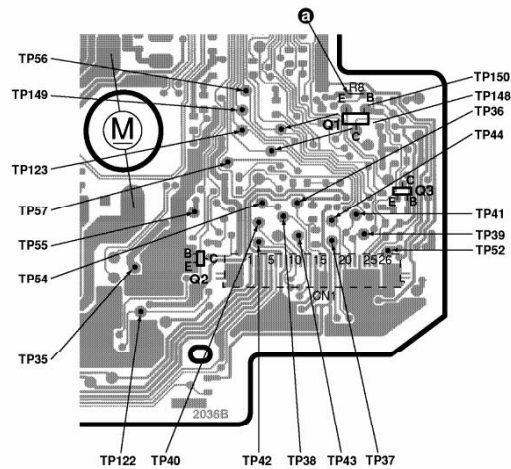
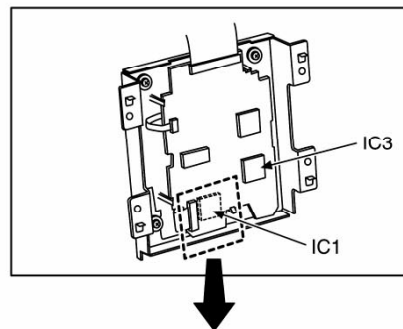
- Check the MD servo P.C.B. (side A) as shown below.



〈Checking procedure for the MD servo P.C.B. (side B)〉

- Two types of procedures for checking MD servo P.C.B. are as follows.
 1. Use the test points on the side A of MD servo P.C.B..
(Only the IC1 can be checking correctly.)
 2. With the extension cables, check the side B of MD servo P.C.B..

1. Checking procedure for MD servo P.C.B. (side A) by using the test points.

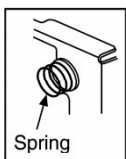
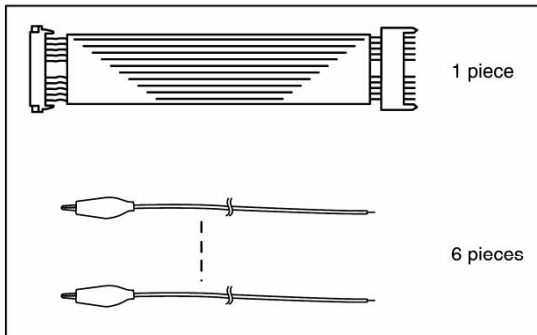


Pin No. of IC1	Test point	Pin No. of IC1	Test point
2PIN	Left side of R8 (a)	32PIN	TP52
5PIN	TP54	36PIN	Equivalent for pin 16 of IC3
11PIN	TP55	37PIN	TP35
16PIN	TP57	38PIN	TP44
21PIN	TP66	39PIN	TP37
26PIN	TP36	40PIN	TP38
27PIN	TP150	41PIN	TP43
28PIN	TP149	44PIN	TP42
29PIN	TP148	45PIN	TP40
30PIN	TP123	46PIN	TP39
31PIN	TP122	47PIN	TP41

(The waveforms are noted on the schematic diagram.)

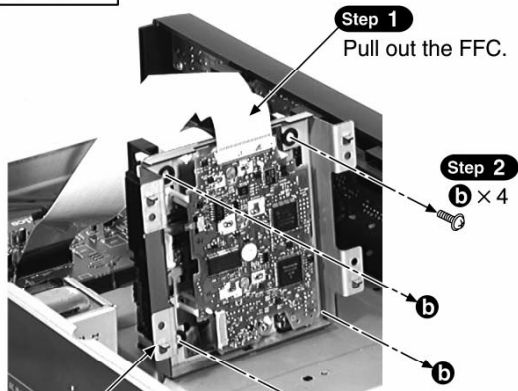
2. Checking procedure for MD servo P.C.B. (side B) by using the extension cables.

Extension cable kit. [RFKZJMD100EK]



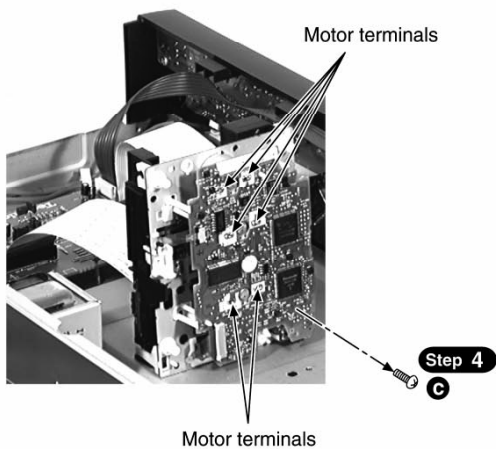
NOTE

Take care not loose the spring when removing the angle.

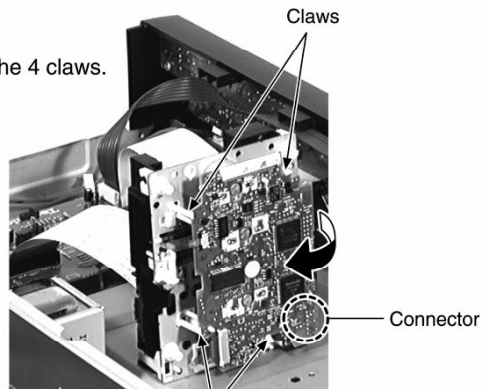


Step 3
Remove the angle.

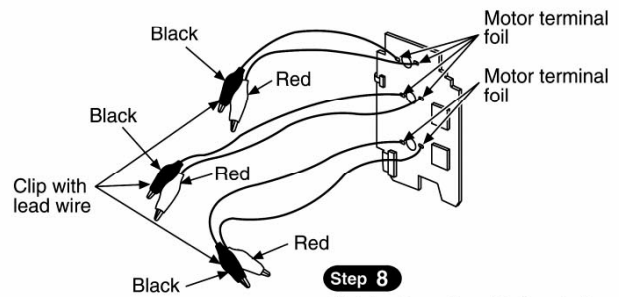
Step 5
Unsolder the motor terminals (6 points).



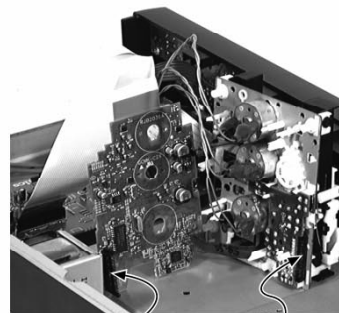
Step 6
Release the 4 claws.



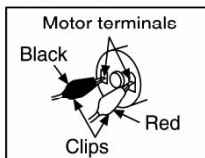
Step 7
Remove the connector, and then open the MD servo P.C.B. in the direction of arrow.



Step 8
Solder the clip with lead wire to the motor terminal foil



Step 9
Connect the clip to the motor terminals. (6 points)

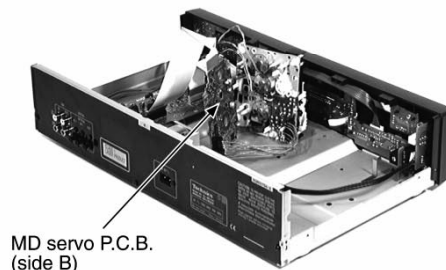


NOTE

Handle with care the polarity to connect the terminal when installing the motor.

Step 10
Connect the extension cable to the connector.

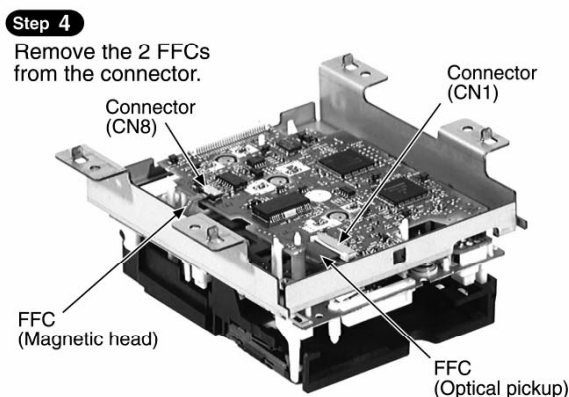
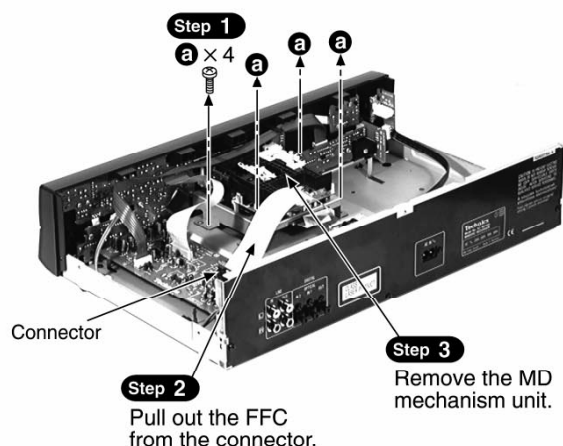
• Check the MD servo P.C.B. (side B) as shown below.



■ Main Component Replacement Procedures

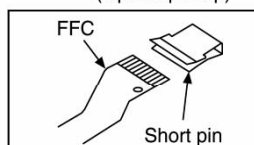
1. Replacement for the magnetic head and optical pickup

- Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 25.



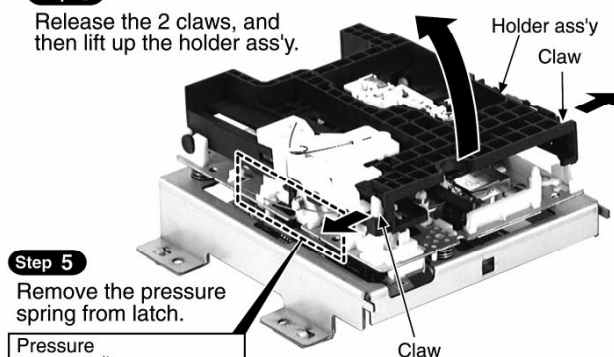
NOTE

Insert a short pin into the traverse unit FFC board.
(Refer to "Handling Precautions for Traverse deck" on page 2.)



Step 6

Release the 2 claws, and then lift up the holder ass'y.

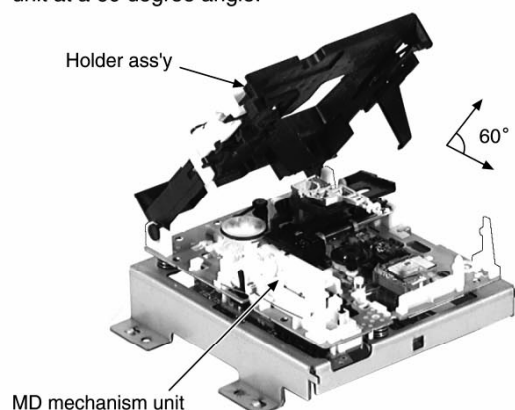


NOTE

When installing the holder ass'y, the pressure spring should be latched correctly.

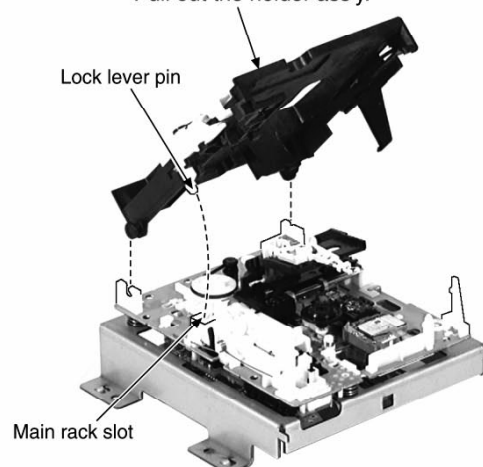
Step 7

Set the holder ass'y and MD mechanism unit at a 60 degree angle.



Step 8

Pull out the holder ass'y.



NOTE

When installing the holder ass'y, align the lock lever pin with the main rack slot.

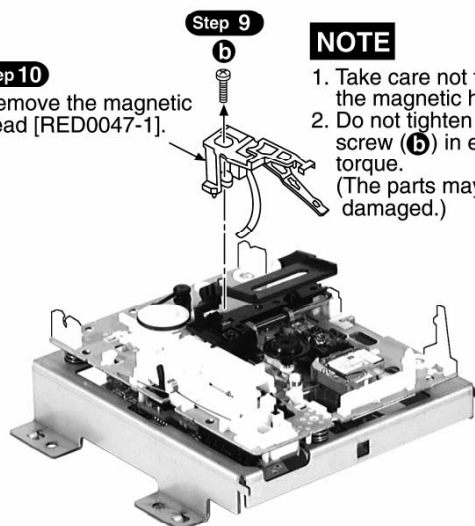
Step 9

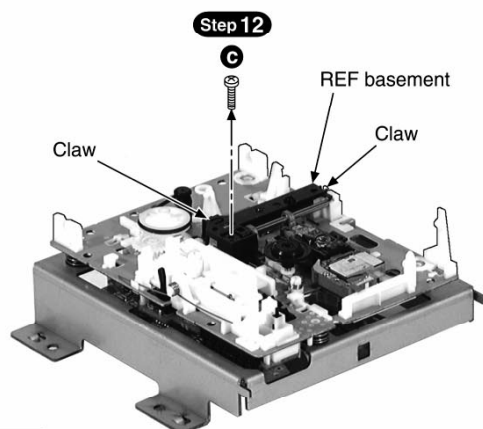
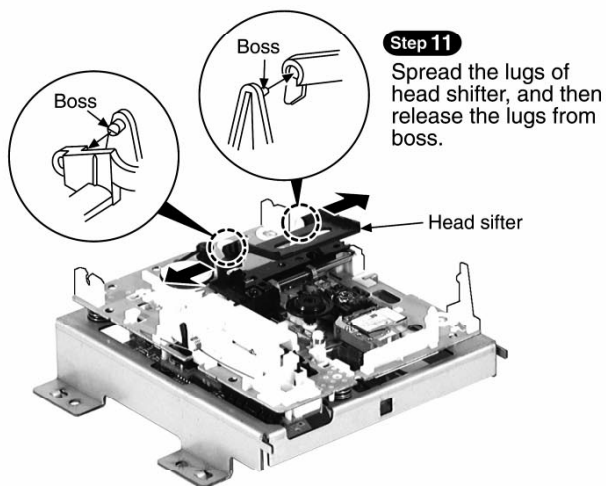
NOTE

1. Take care not to damage the magnetic head.
2. Do not tighten the set screw (b) in excessive torque.
(The parts may be damaged.)

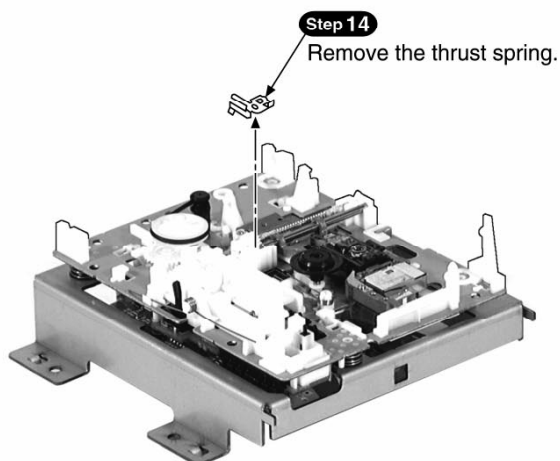
Step 10

Remove the magnetic head [RED0047-1].

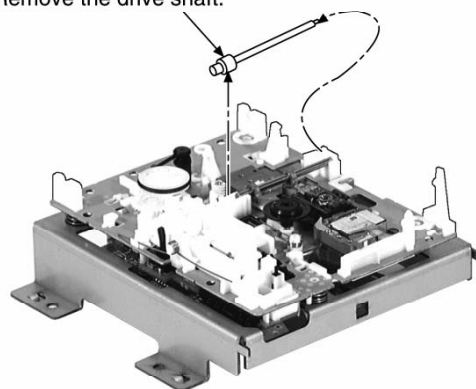




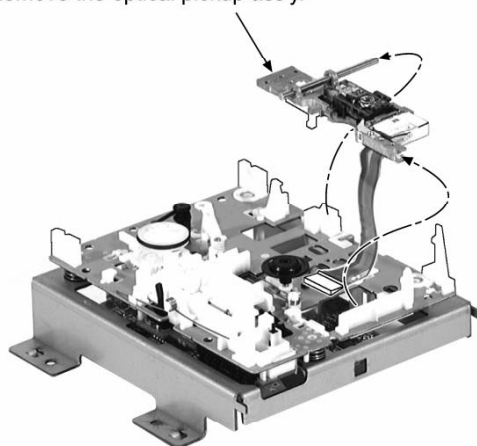
Step 13
Release the 2 claws, and then remove the REF basement.



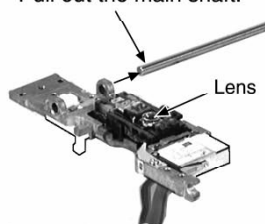
Step 15
Remove the drive shaft.



Step 16
Remove the optical pickup ass'y.



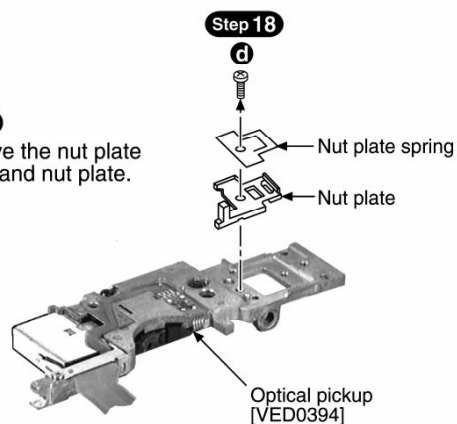
Step 17
Pull out the main shaft.



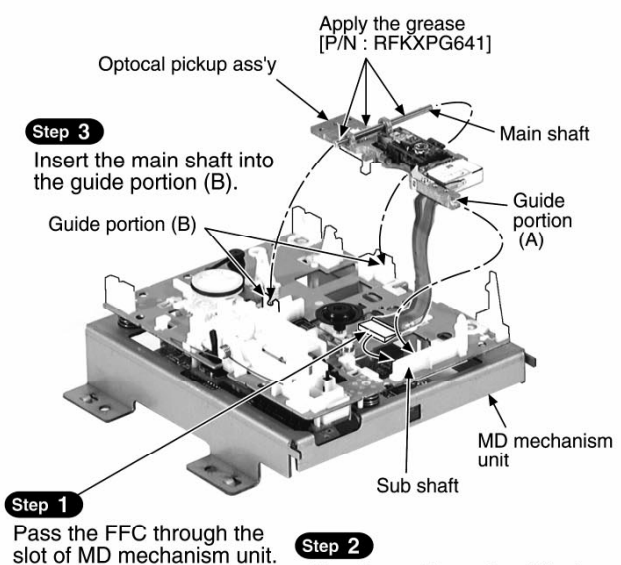
NOTE

1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not apply the grease on the lens of optical pickup.
3. Do not touch the lens of the optical pickup.

Step 19
Remove the nut plate spring and nut plate.

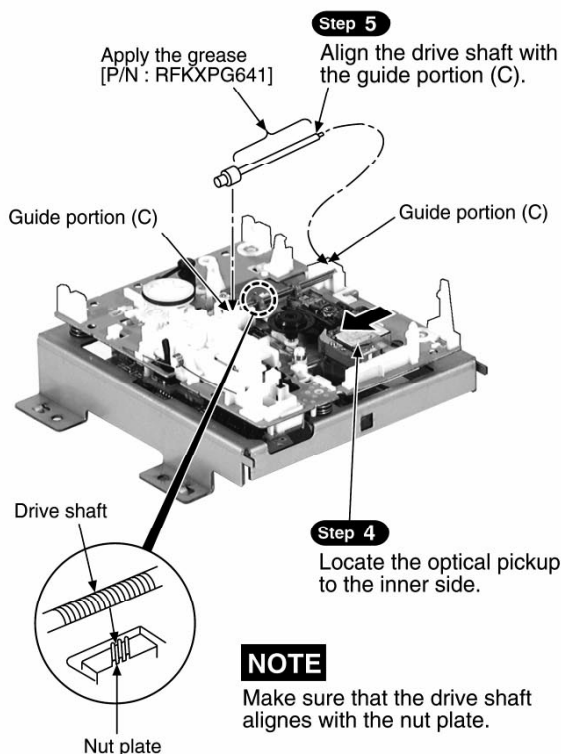


Notice for installing the optical pickup



NOTE

Take care not to bend the FFC.

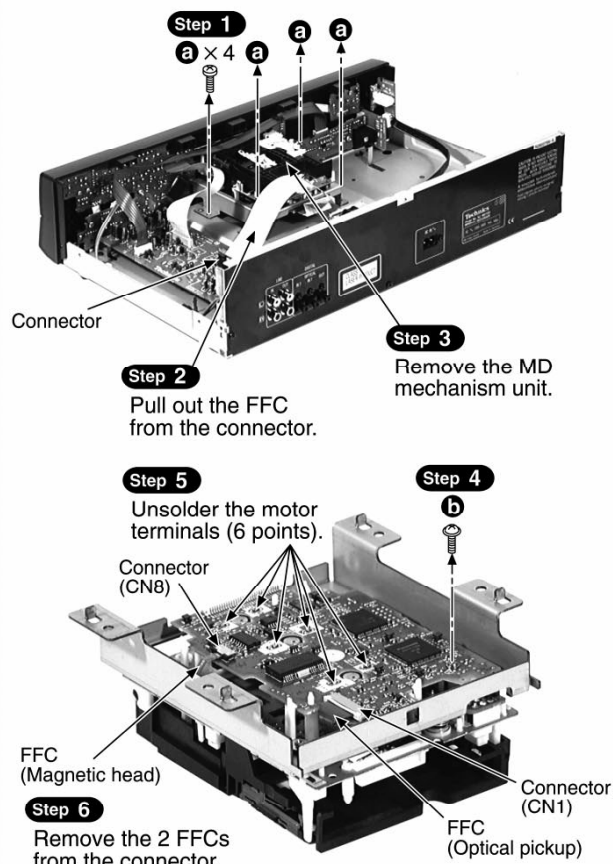


NOTE

Make sure that the drive shaft alignes with the nut plate.

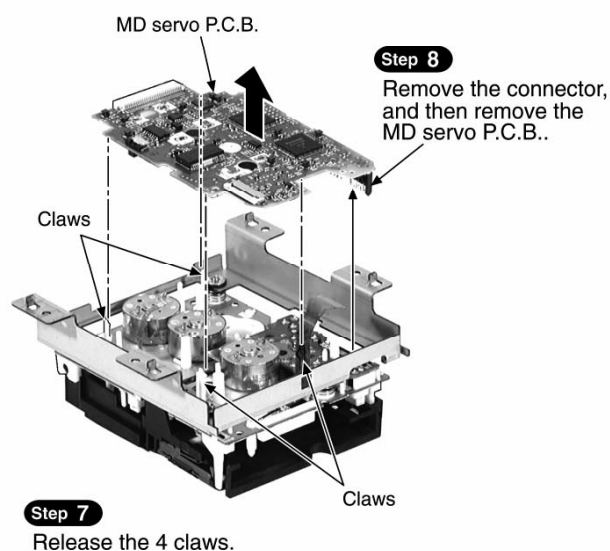
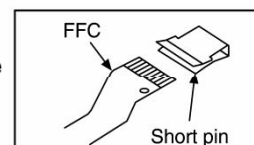
2. Replacement for the belt and loading motor ass'y

Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 25.



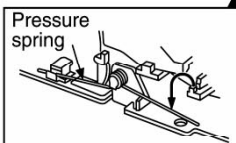
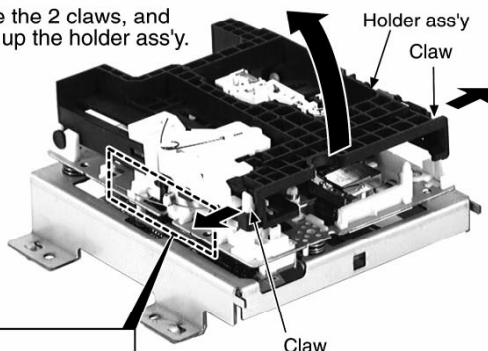
NOTE

Insert a short pin into the traverse unit FFC board. (Refer to "Handling Precautions for Traverse deck" on page 2.)



Step 10

Release the 2 claws, and then lift up the holder ass'y.

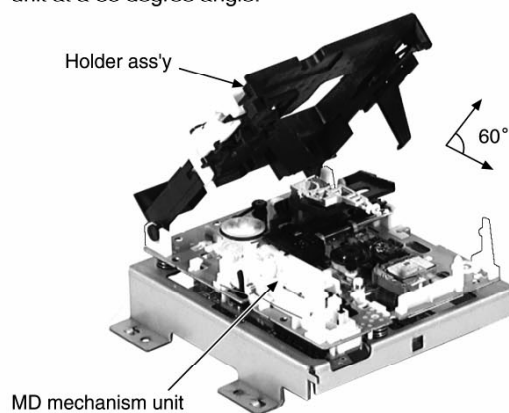


Step 9

Remove the pressure spring from latch.

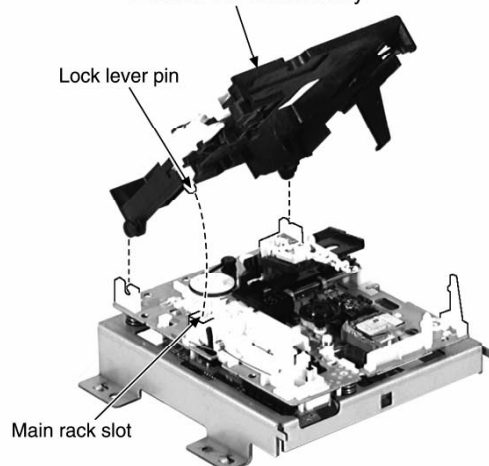
Step 11

Set the holder ass'y and MD mechanism unit at a 60 degree angle.



Step 12

Pull out the holder ass'y.

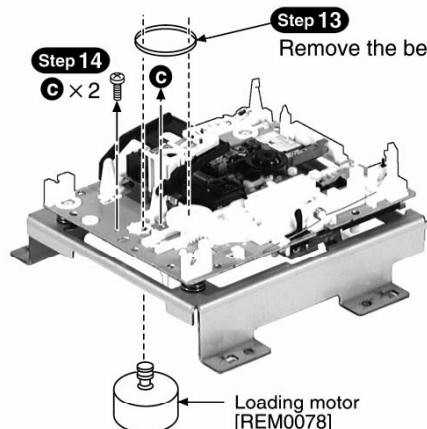


NOTE

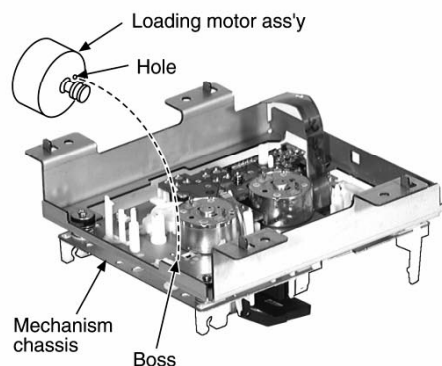
When installing the holder ass'y, align the lock lever pin with the main rack slot.

Step 13

Remove the belt [RDV0055].



Notice for installing the loading motor ass'y



• Align the hole of loading motor ass'y with the boss of mechanism chassis, and then install the loading motor ass'y

3. Replacement for the traverse motor ass'y

- Follow the **Step 1** ~ **Step 3** of the item 1 in checking procedure for each P.C.B. on page 25.
- Follow the **Step 1** ~ **Step 11** of the item 2 in main component replacement procedures on pages 31 and 32.

Step 1

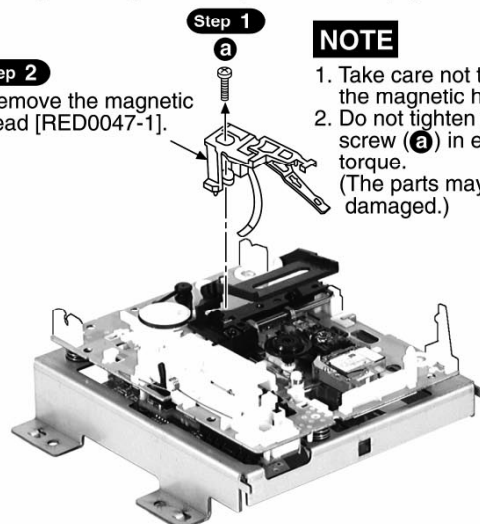
a

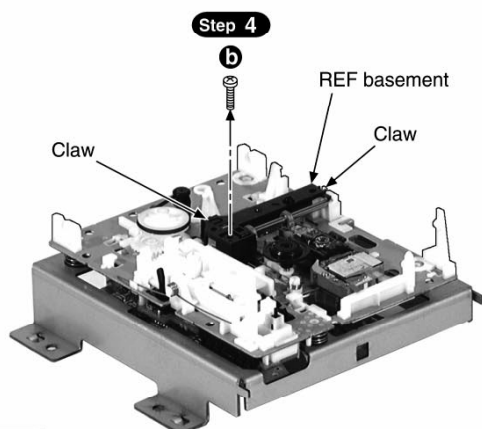
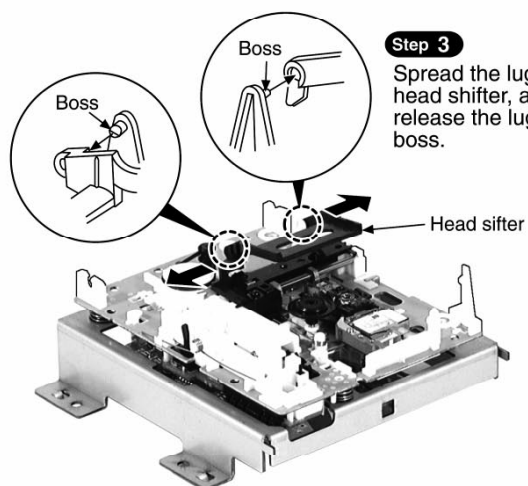
NOTE

1. Take care not to damage the magnetic head.
2. Do not tighten the set screw (**a**) in excessive torque. (The parts may be damaged.)

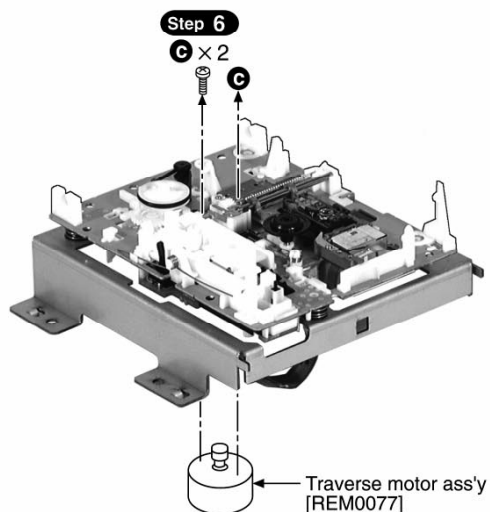
Step 2

Remove the magnetic head [RED0047-1].



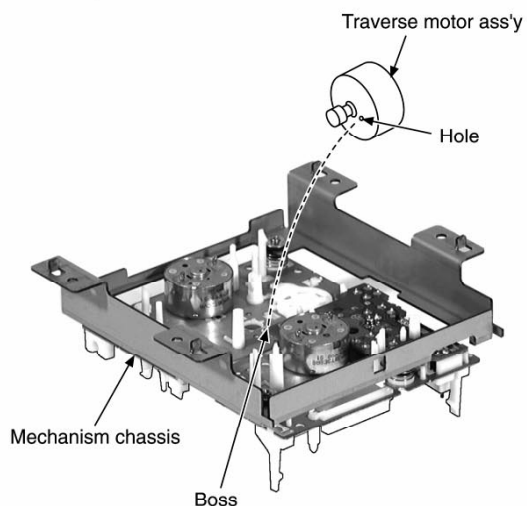


Step 5
Release the 2 claws, and then remove the REF basement.



Notice for installing the traverse motor ass'y

- Align the hole of traverse motor ass'y with the boss of mechanism chassis, and then install the traverse motor ass'y



■ Self-Diagnostic Function

This unit is equipped with a self-diagnostic function which, in the event of a malfunction, automatically display a code indicating the nature of the malfunction. Use this self-diagnostic function when servicing the unit.

Switching to the Self-Diagnostic Mode

1. Turn the power on.
2. Press and hold the STOP button (■) for at least 2 seconds. and while still pressing the STOP button (■), press the FWD SEARCH button (▶▶) for at least 2 seconds. (Shown in Fig.1) The unit enters Self-Diagnostic Mode and is displayed "MD TEST". Then an error code is displayed, if any. For details of the error codes, see Table 1.
3. If more than one error exists, the display will sequentially show the respective error codes each time the FWD SEARCH button (▶▶) is pressed.

Canceling the Self-Diagnostic Mode

1. The Self-Diagnostic Mode can be canceled by pressing the POWER button (POWER) to turn the system off. And then pressing the power button again to turn it again.

Clearing the Self-Diagnostic Mode

1. The contents of abnormality display are stored in memory. In order to clear the memory, continue to press the STOP button (■) for at least 5 seconds while in the Self-Diagnostic Mode. The memory will clear. Always be sure to clear this memory after completing repair.

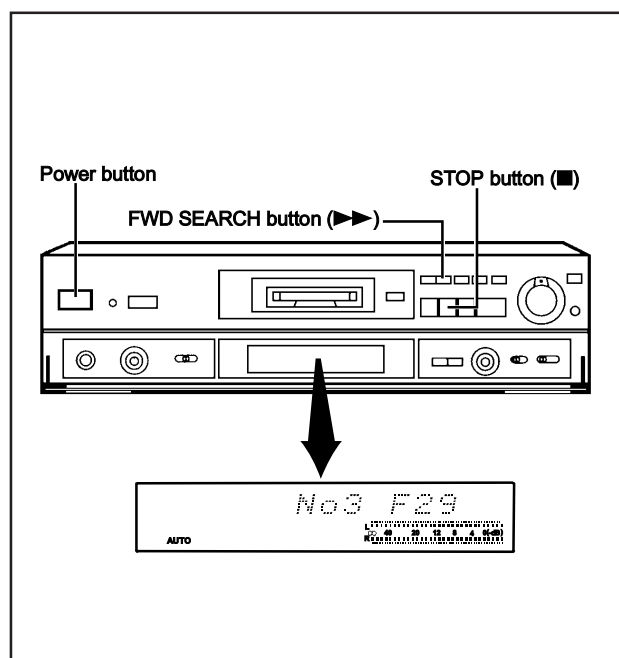


Fig. 1

Error Code	Symptom	Possible Cause
F15	Interval till MD starts playing is too long.	• Pickup home position sense switch (S8) is defective; check and replace if necessary.
F26	MD is loaded but cannot be played.	• Communications error between the servoprocessor IC and the microprocessor IC (system control). Check if the flexible circuit board is disconnected. • Displayed when the disc is scratched too.
F28	MD cannot be loaded.	• Confirm that the disc is not catching on anything. • The connection (flexible circuit board or connector cable) between the MD unit and the MD servo circuit board is disconnected or damaged; check and replace if necessary. • The MD unit may be malfunctioning; replace it.
F29	MD cannot be ejected.	• Confirm that the disc is not catching on anything. • The connection (flexible circuit board or connector cable) between the MD unit and the MD servo circuit board is disconnected or damaged; check and replace if necessary. • The MD unit may be malfunctioning; replace it.

Table 1

■ Self Check Function

This unit is equipped with a self check function which can detect a part of malfunction. Use this function before servicing the unit and check the item as shown below.

• Setting to the Self Check Function

1. Turn the power on.
2. Press and hold the STOP button (■) for at least 2 seconds. and while still pressing the STOP button (■), press the REV. SEARCH button (◀◀) for at least 2 seconds. Then the unit enters Self Check Function.

• Checking the operation switches

1. When the unit enters the Self Check Function, the FL display turn off.
2. Press the buttons on the unit except the POWER button , it displays "-" mark adapted each buttons. (Fig. 2 and 3 is shown about a allotment.)

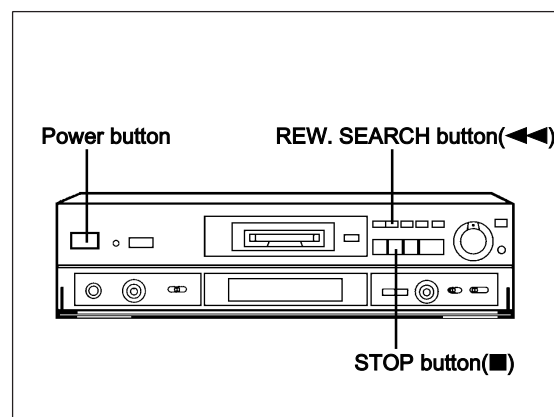
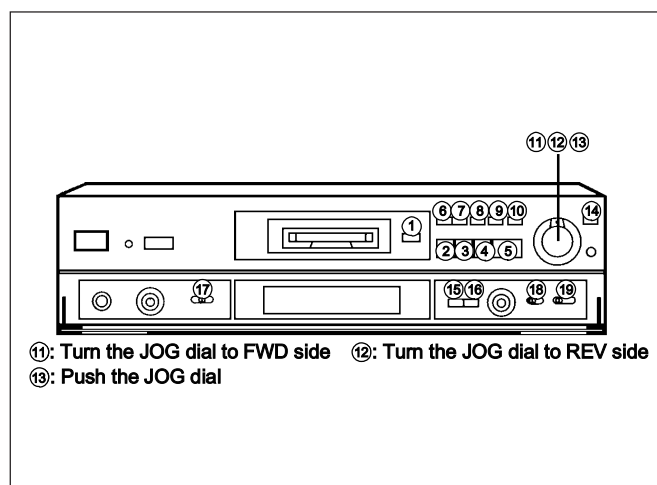


fig. 1



- ⑪: Turn the JOG dial to FWD side ⑫: Turn the JOG dial to REV side
⑬: Push the JOG dial

fig. 2

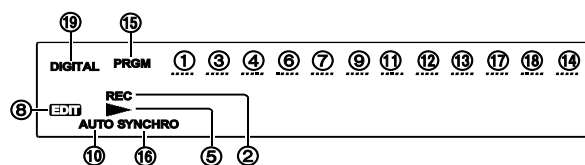


fig. 3

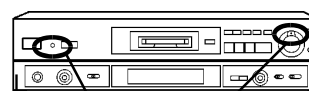
• Checking the FL display

1. All buttons works normally except the POWER button, FL display and LED turns on and off at 0.5 second interval. (See the fig. 4, 5)

The Self Check Function can be canceled by pressing the POWER button (POWER) or pressing and holding the STOP button (■) for at least 2 seconds.



fig. 4



LED

fig. 5

■ Schematic Diagram

	Page		Page
A MD SERVO CIRCUIT	37 – 42	F OPERATION (2) CIRCUIT	48
B SWITCH CIRCUIT	37	G OPERATION (1) CIRCUIT	48
C FL CIRCUIT	43 – 44	H HEADPHONES JACK CIRCUIT	48
D SENSOR CIRCUIT	43	I POWER SW CIRCUIT	48
E MAIN CIRCUIT	45 – 48	J POWER TRANSFORMER CIRCUIT	48

● This schematic diagram may be modified at any time with the development of new technology.

Notes:

- **S1** : Write protect tab detect switch.
- **S2** : ROM/RAM Disc detect switch.
- **S3** : PLAY•REC/PLAY mode detect switch.
- **S4** : DISC IN detect switch.
- **S5** : PLAY/REC mode detect switch.
- **S6** : PLAY mode detect switch.
- **S7** : Disc loading detect switch.
- **S8** : Rest detect switch.
- **S901,902** : Search (S901:◀◀ S902:▶▶) switch. (◀◀,▶▶ SEARCH)
- **S903** : Editing mode switch. (EDIT)
- **S904** : Enter switch used in editing. (ENTER)
- **S905** : Track mark mode select/Character skip switch. (TRACK MARK/CHARA SKIP)
- **S906** : Display mode select/ Character select switch. (DISP/CHARA)
- **S907** : Eject switch. (▲ EJECT)
- **S908** : Stop switch. (■)
- **S909** : Pause switch. (||)
- **S910** : Playback/recording start switch. (▶)
- **S911** : Record switch. (●)
- **S912** : Syncro-record switch. (SYNCRO REC)
- **S913** : Playback mode select switch. (PLAY MODE)
- **S251** : Unit on/off switch. (■○ = ○/I)
- **S901A** : Timer mode select switch. (⊙ TIMER)
- **S902A** : Input mode select switch. (INPUT)
- **S903A** : Recording mode select switch. (REC MODE)
- **VR1** : Laser power adjustment VR.
- **VR801** : Headphones level control VR. (PHONES LEVEL)
- **VR851** : Recording level control VR. (REC LEVEL)
- **VR901** : JOG/skip VR. (JOG/PUSH. SET I◀◀,▶▶I)

● Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark : MD STOP () : MD PLAY < > : MD REC

● Important safety notice:

Components identified by ▲ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

● Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

Cover the parts boxes made of plastics with aluminum foil.

Ground the soldering iron.

Put a conductive mat on the work table.

Do not touch the legs of IC or LSI with the fingers directly.

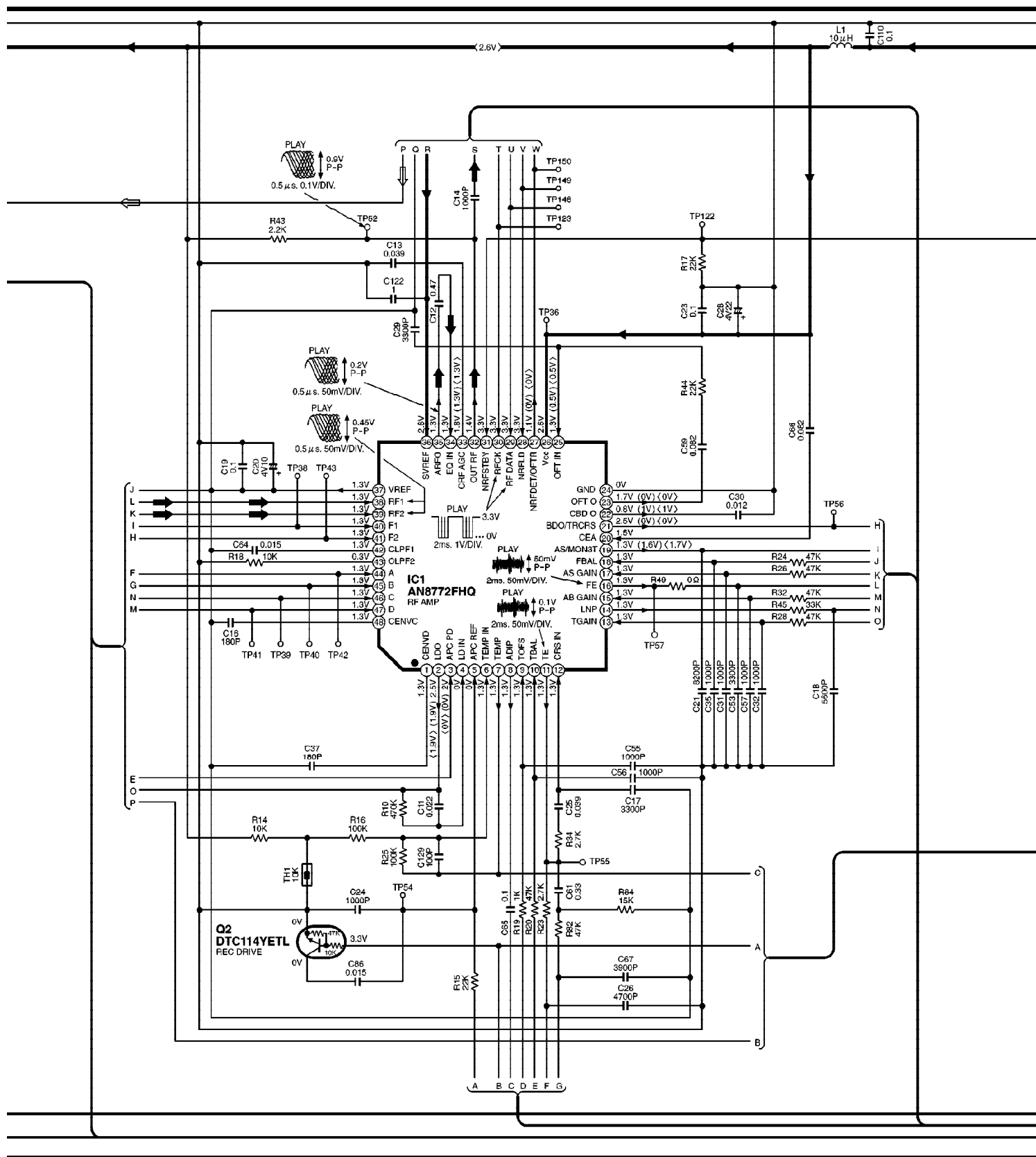
● Voltage and signal line

→ : Positive voltage line

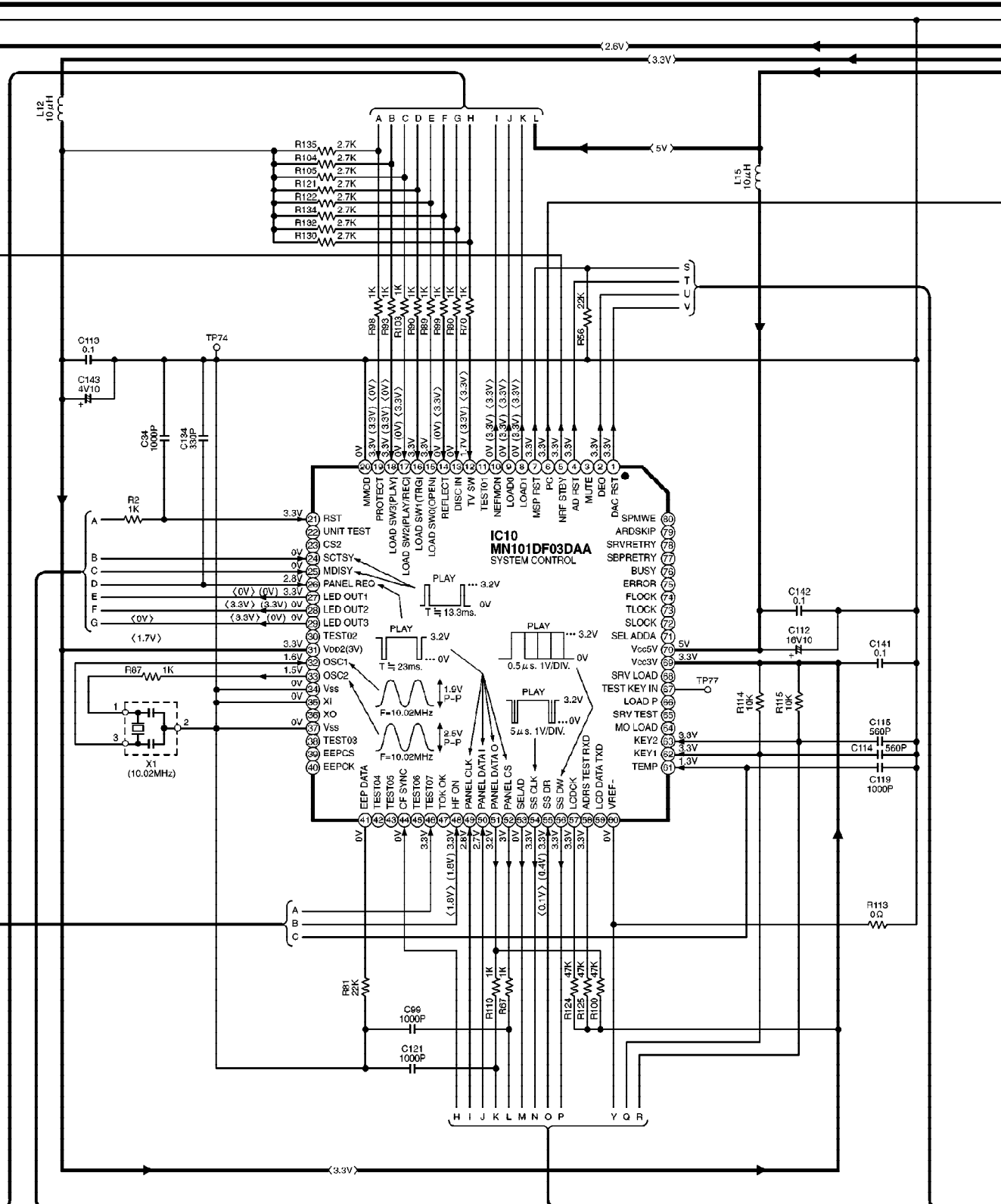
---→--- : Negative voltage line

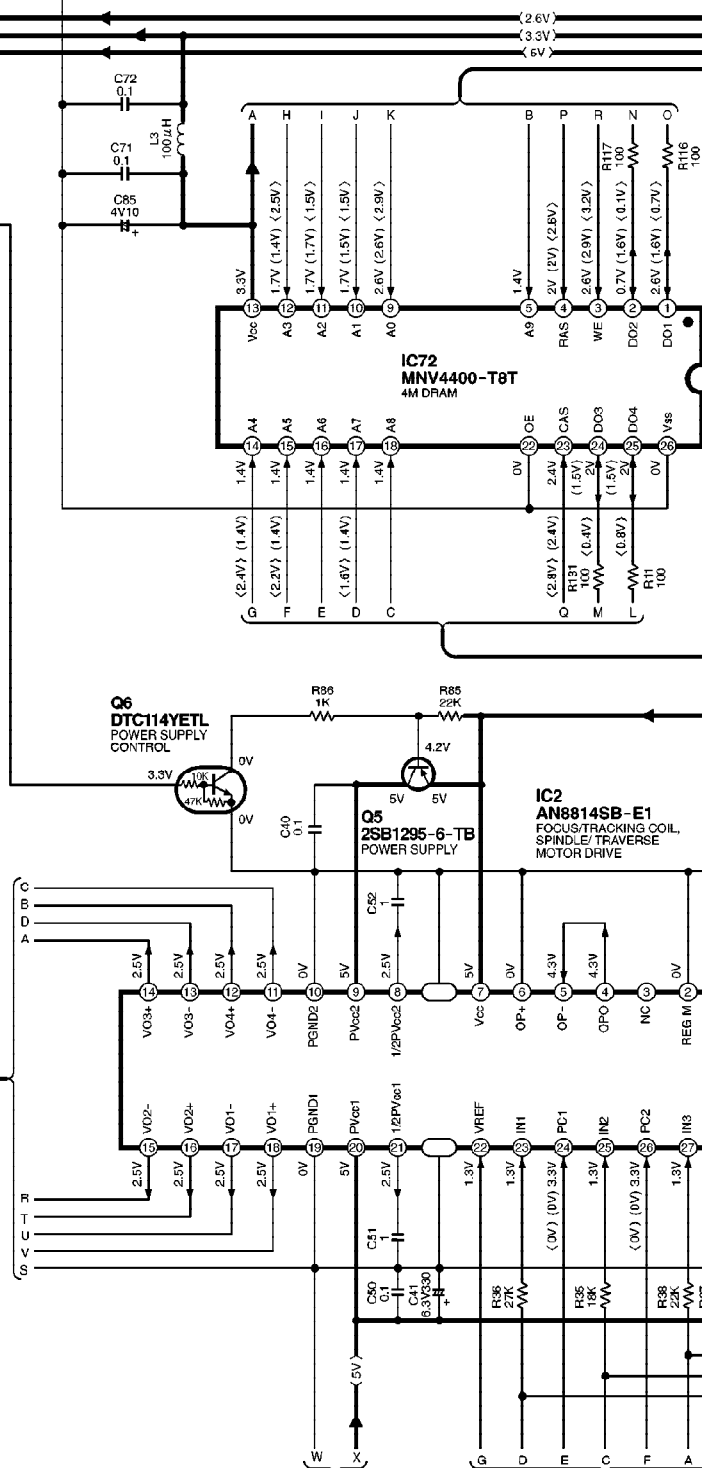
→ : MD play signal line

→ : MD rec signal line



→ : POSITIVE VOLTAGE LINE

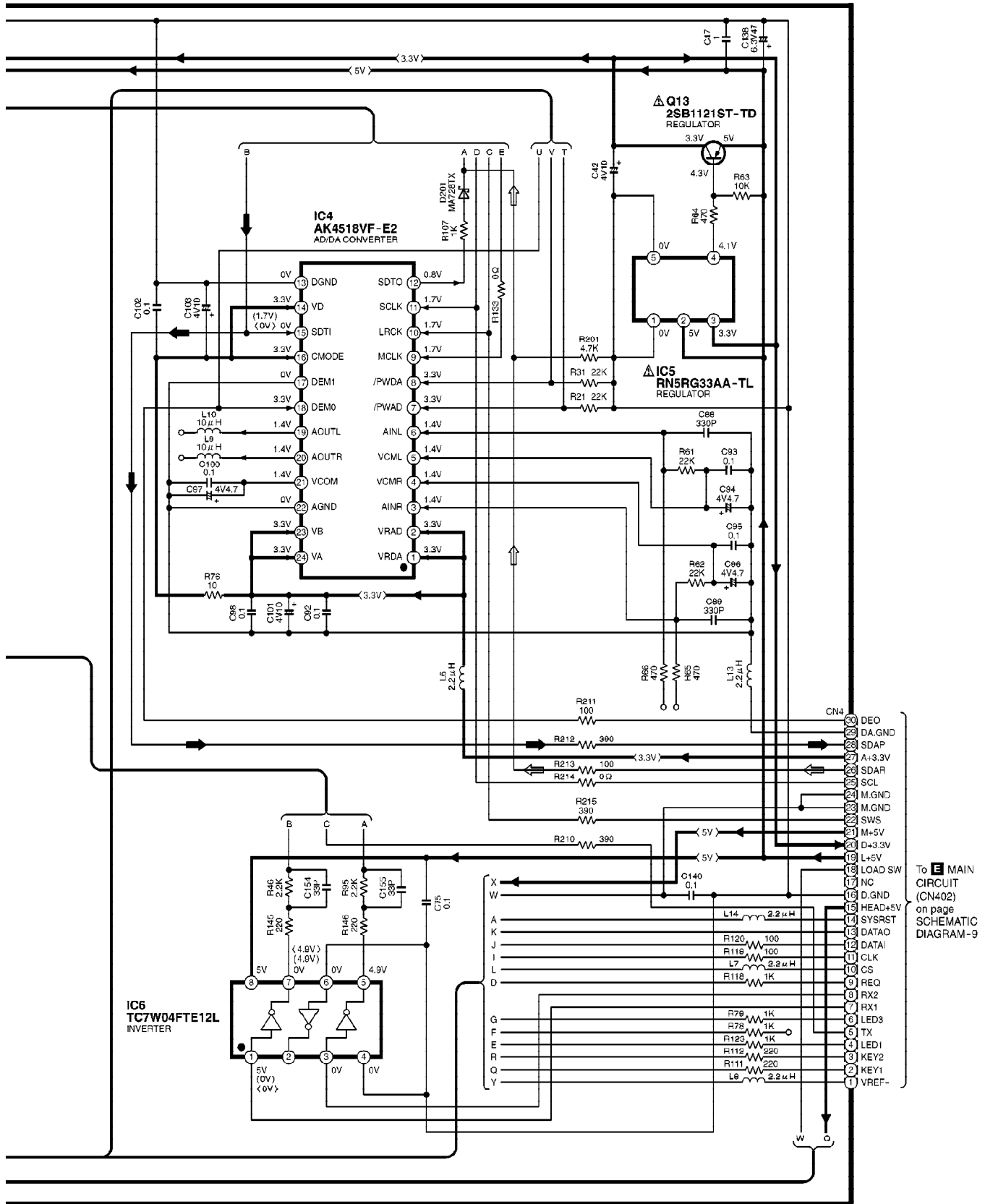




 : POSITIVE VOLTAGE LINE
 : MD PLAY SIGNAL LINE
 : MD REC SIGNAL LINE



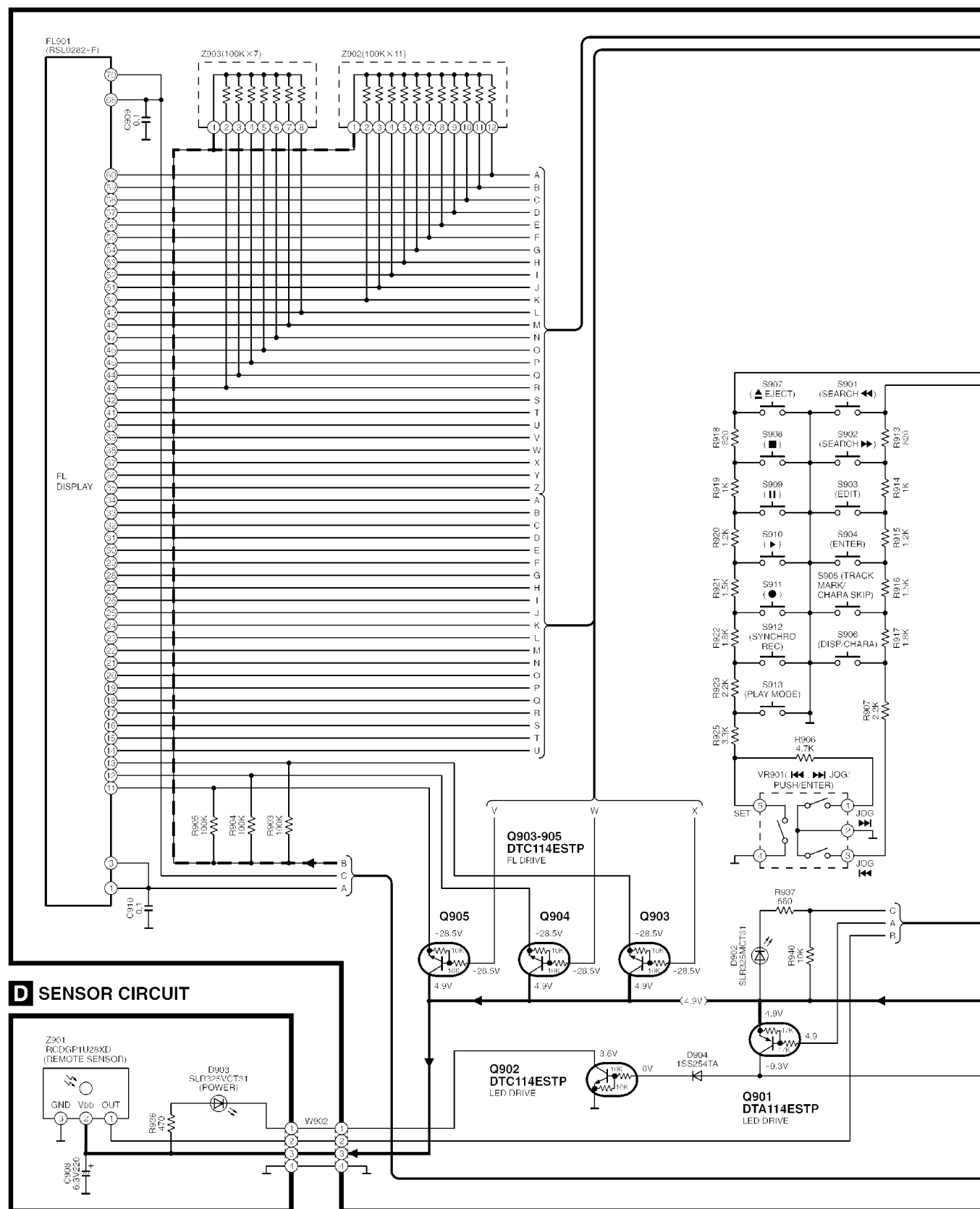
→ : POSITIVE VOLTAGE LINE → : MD PLAY SIGNAL LINE ⇨ : MD REC SIGNAL LINE



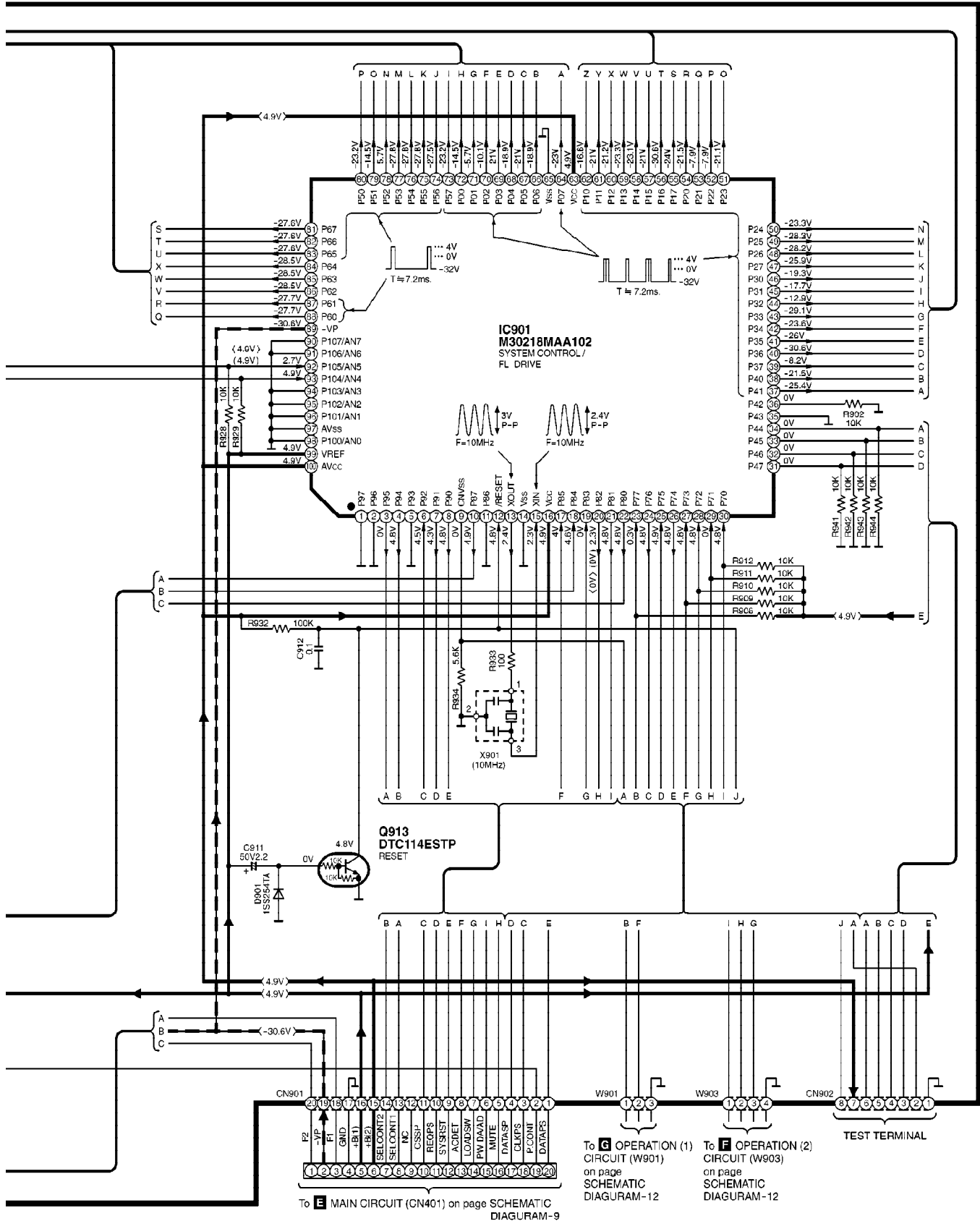
SCHEMATIC DIAGRAM-7

C FL CIRCUIT

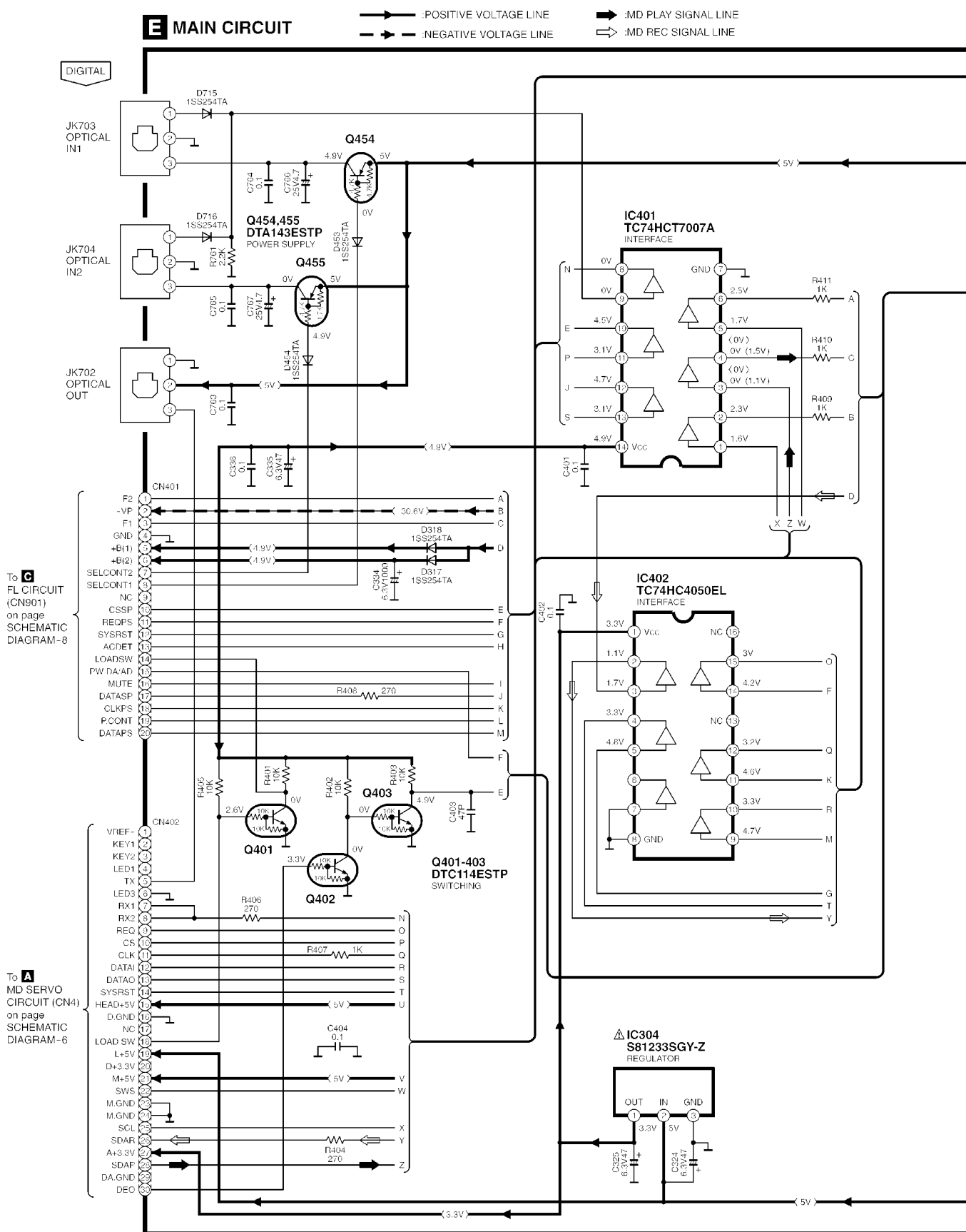
→ : POSITIVE VOLTAGE LINE - - - - - : NEGATIVE VOLTAGE LINE



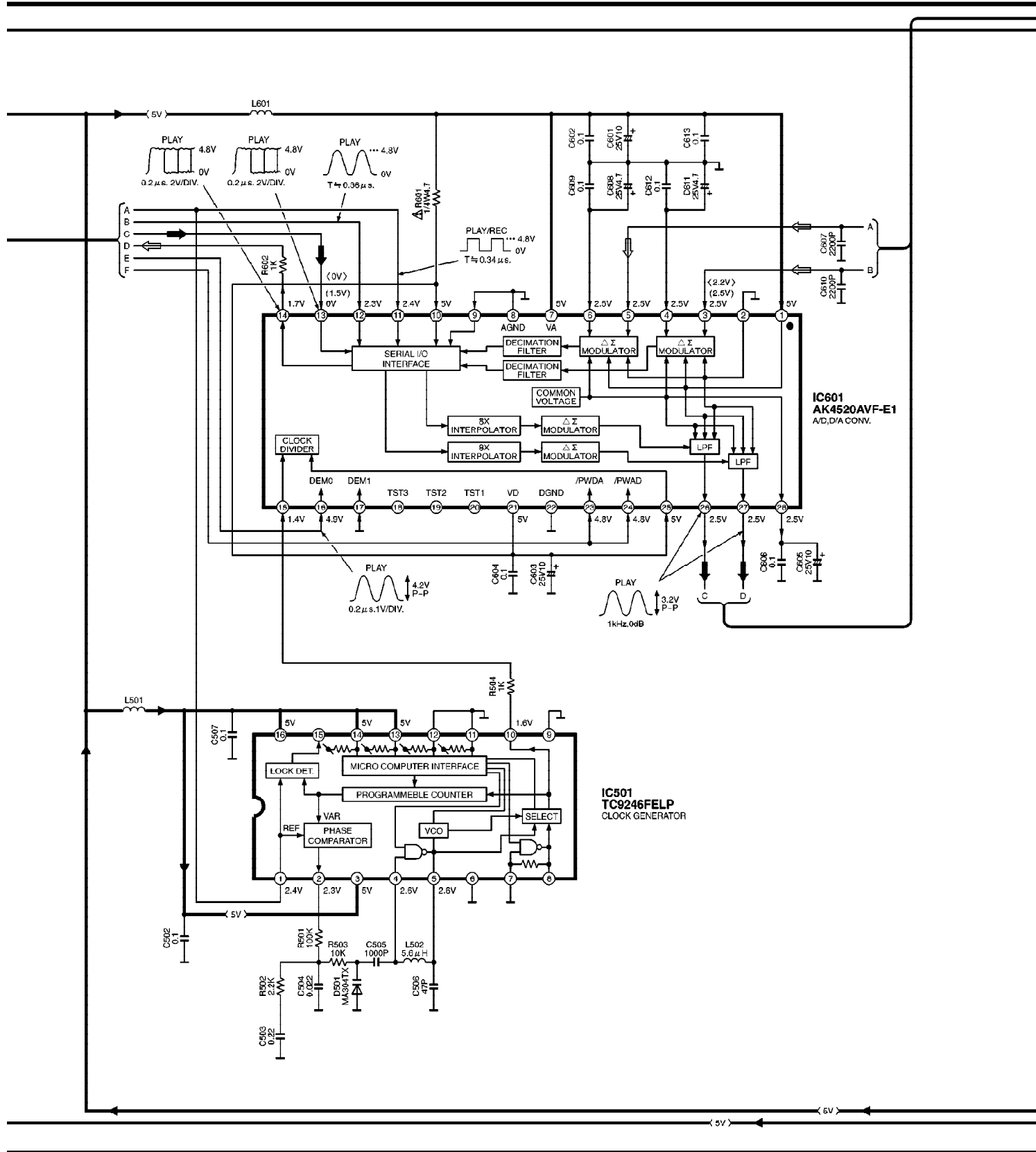
→ : POSITIVE VOLTAGE LINE - - -> : NEGATIVE VOLTAGE LINE



SCHEMATIC DIAGRAM-9



→ : POSITIVE VOLTAGE LINE → : MD PLAY SIGNAL LINE ⇨ : MD REC SIGNAL LINE



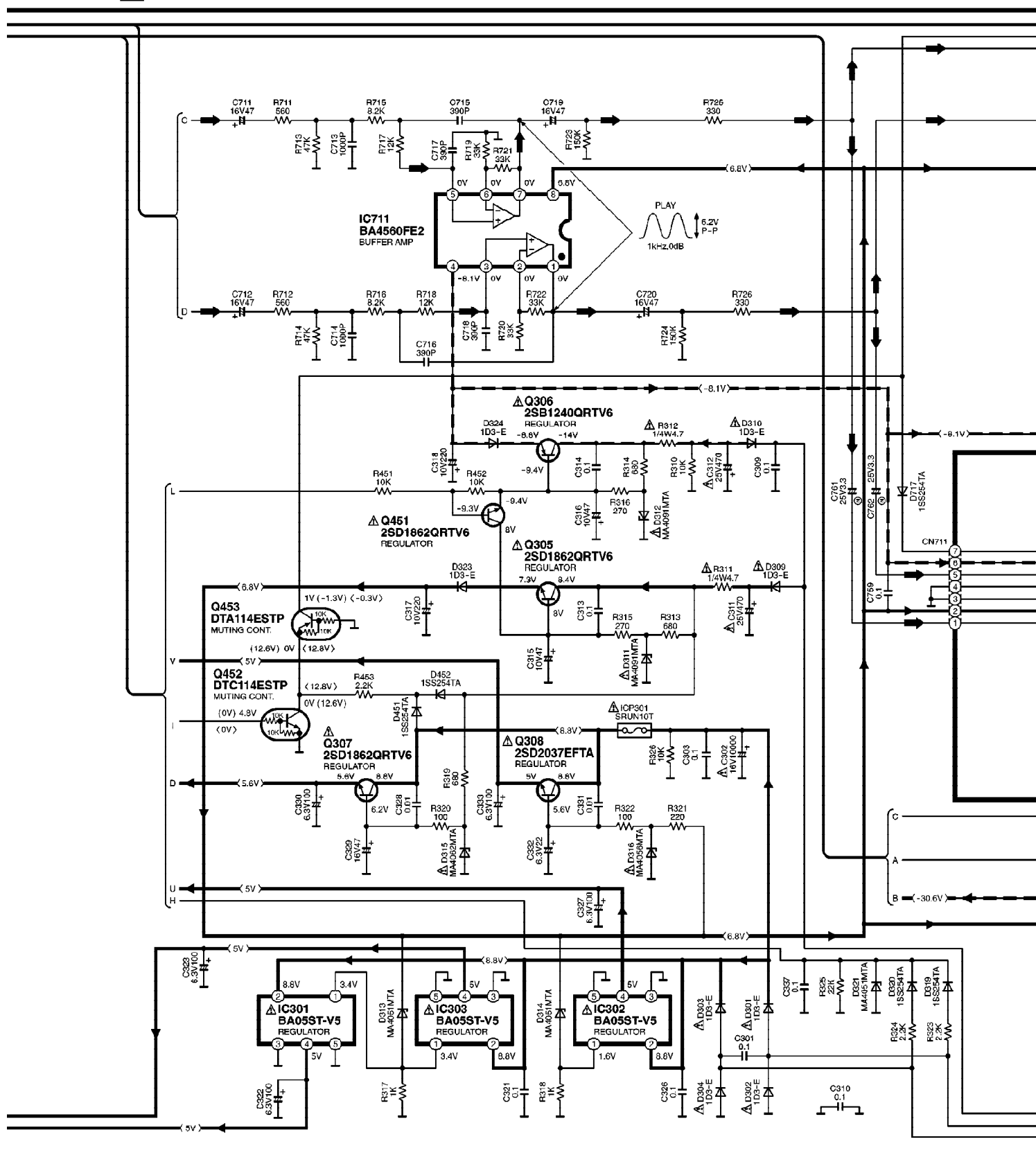
SCHEMATIC DIAGRAM-11

E MAIN CIRCUIT

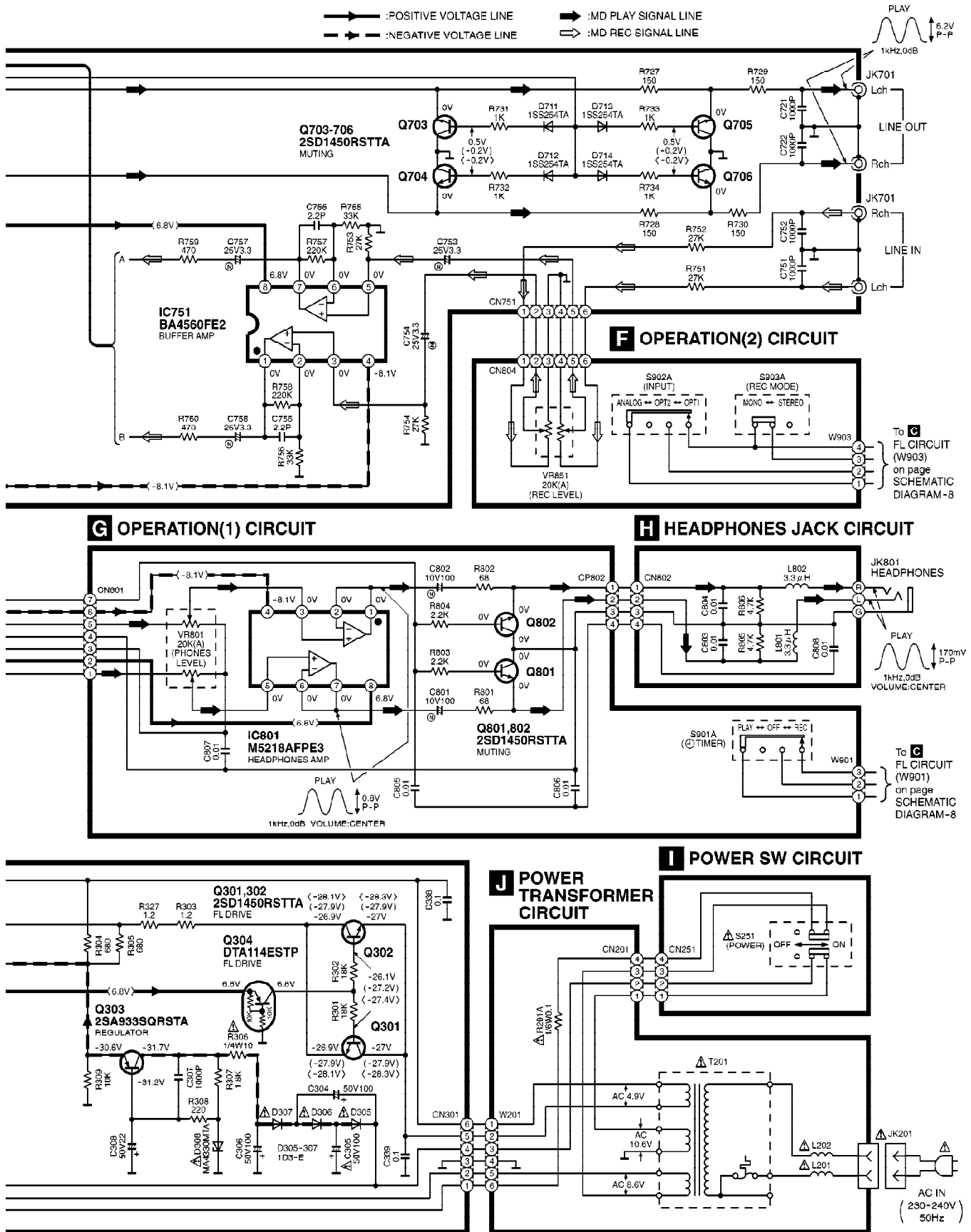
→ : POSITIVE VOLTAGE LINE

— ➔ — :NEGATIVE VOLTAGE LINE

➡ :MD PLAY SIGNAL LINE

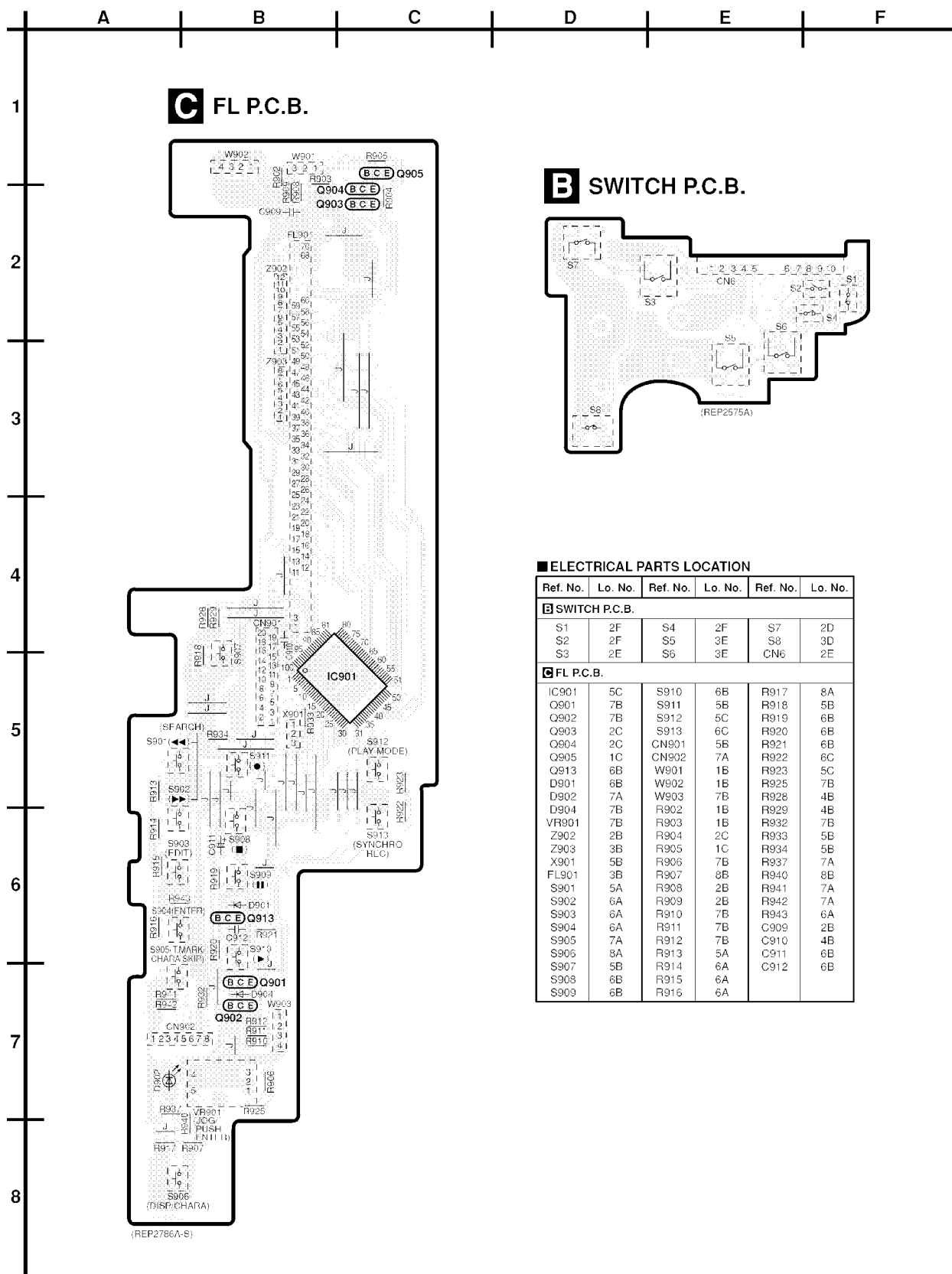


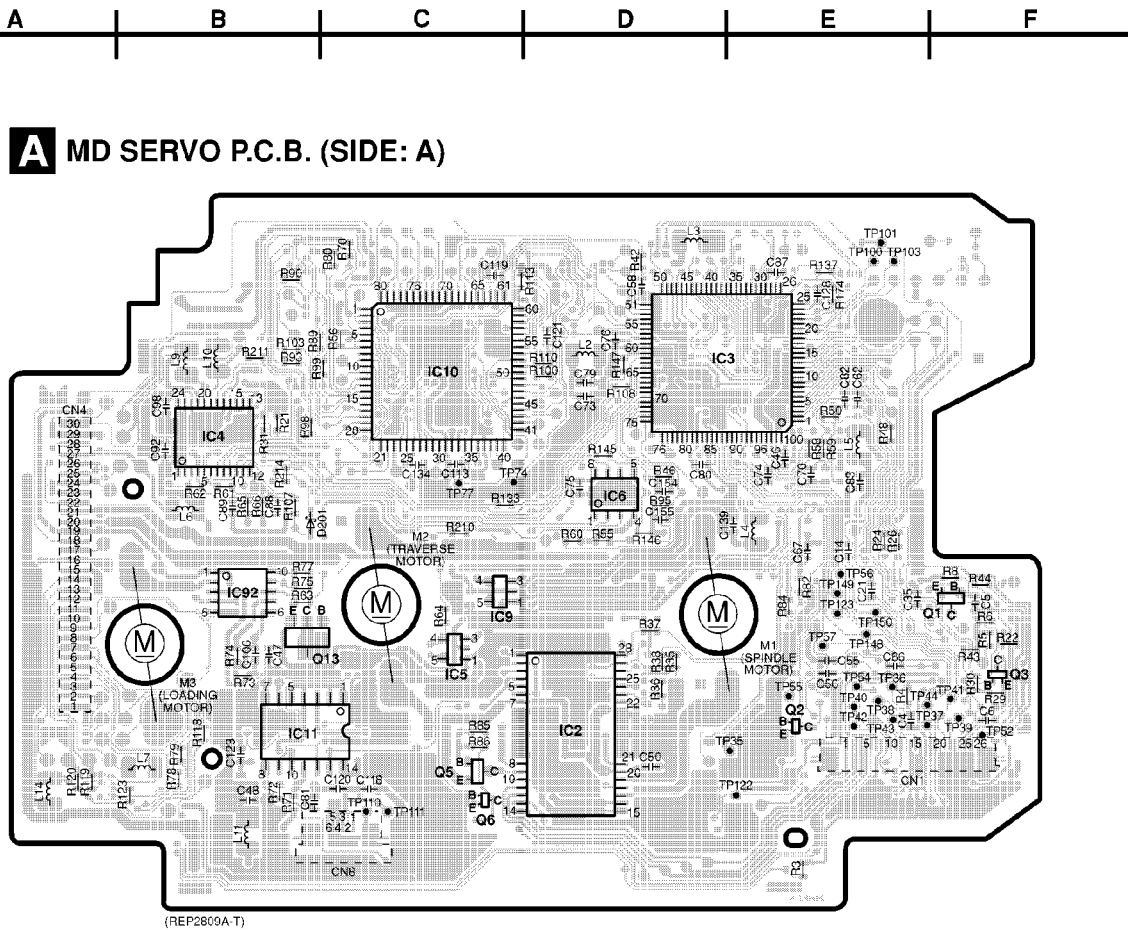
SCHEMATIC DIAGRAM-12



Printed Circuit Board Diagram

• This circuit board diagram may be modified at any time with the development of new technology.

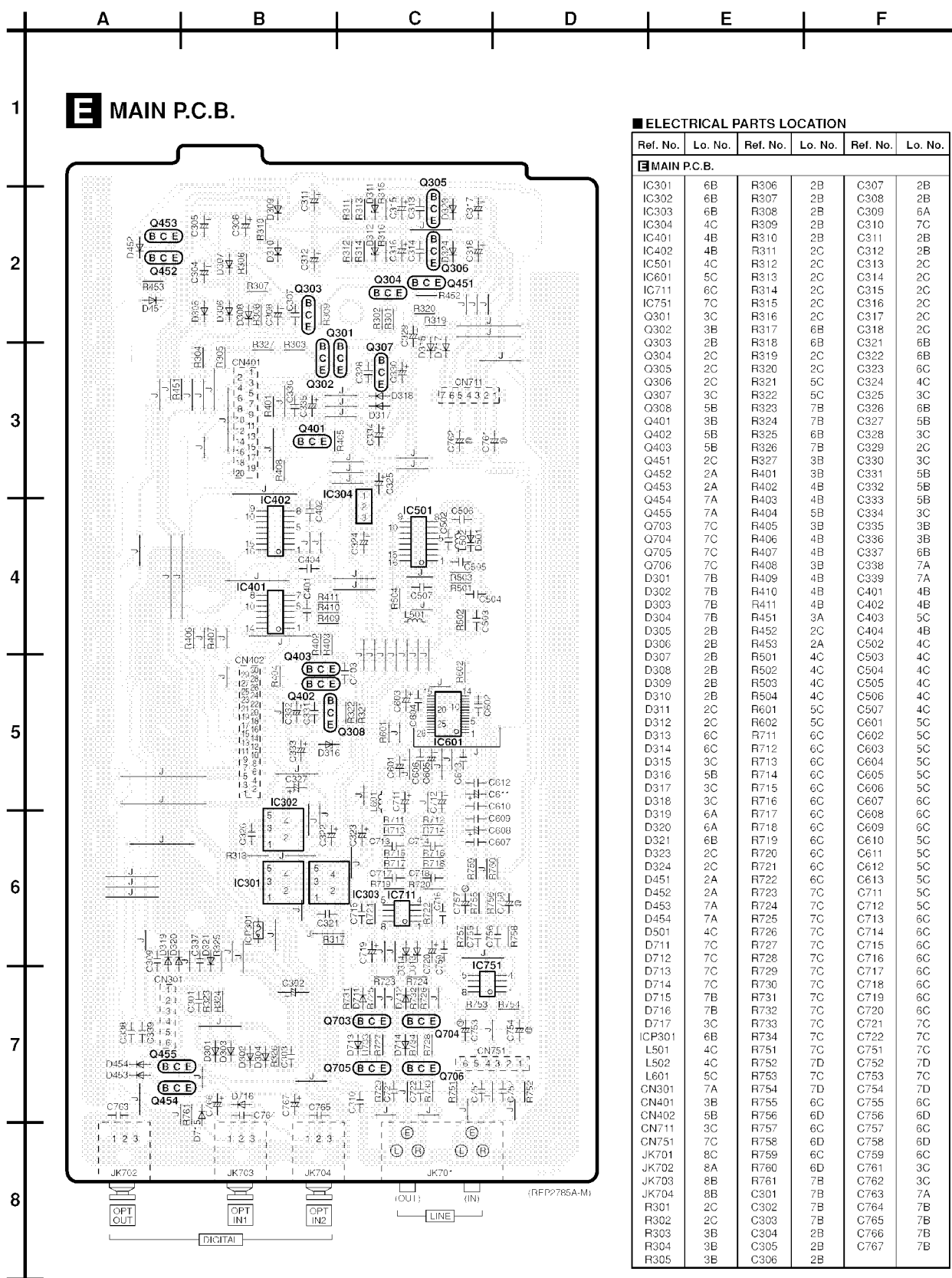


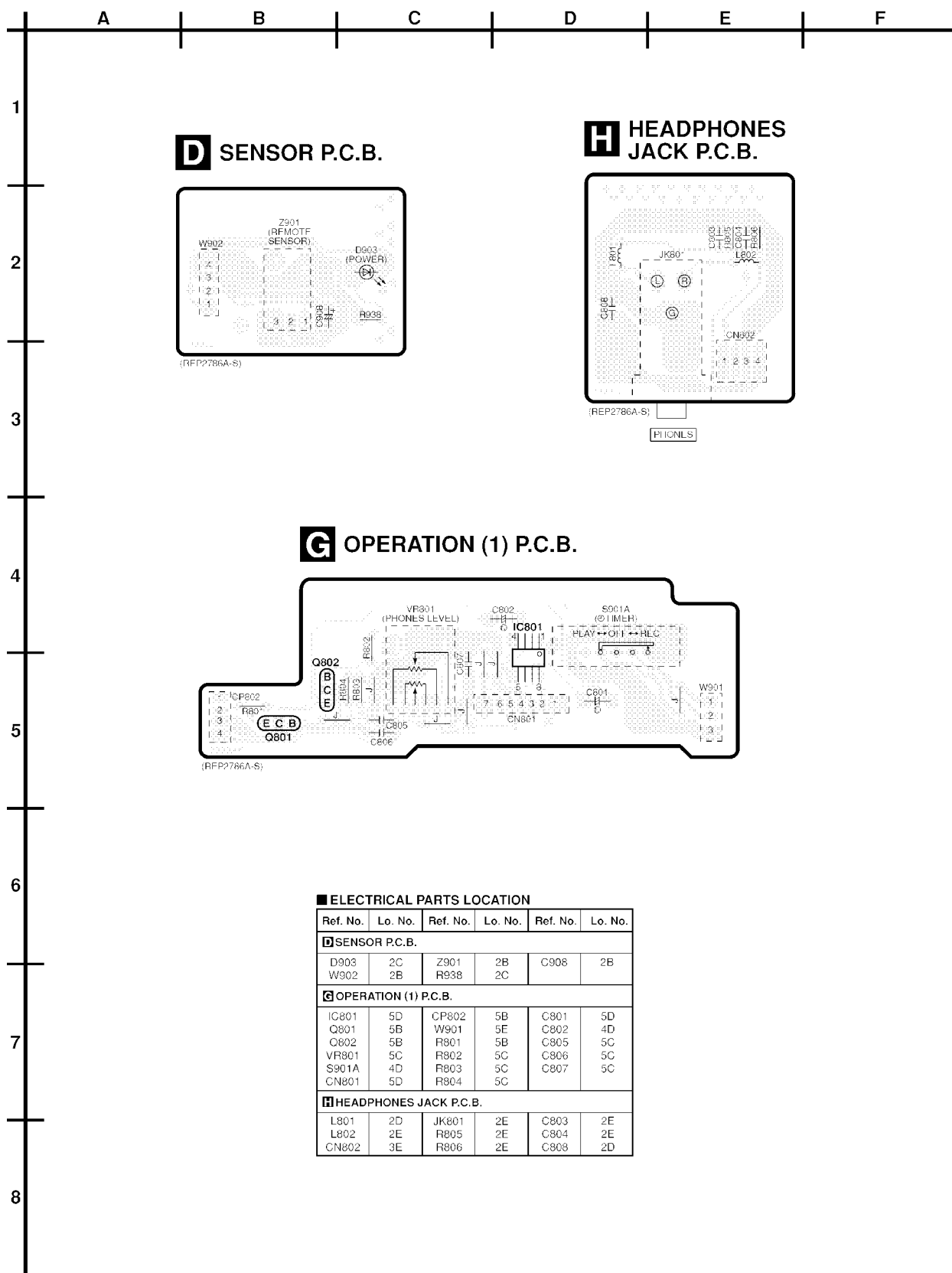


■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
IC2	4D	M1	3D	TP150	3E	R62	3B	R110	2D	C66	4E
IC3	2D	M2	3C	R3	5E	R63	3B	R113	2C	C67	3E
IC4	2B	M3	3B	R4	4E	R64	3C	R118	4B	C70	3E
IC5	4C	TP35	4E	R5	3F	R65	3B	R119	4A	C73	2D
IC6	3D	TP36	4E	R6	3F	R66	3B	R120	4A	C74	3E
IC9	3C	TP37	4E	R8	3F	R70	2C	R123	4B	C75	3D
IC10	2C	TP38	4E	R21	2B	R71	4B	R133	3C	C76	2D
IC11	4B	TP39	4F	R22	3F	R72	4B	R137	2E	C79	2D
IC92	3B	TP40	4E	R24	3E	R73	4B	R145	3D	C80	3D
Q1	3F	TP41	4F	R26	3E	R74	4B	R146	3D	C81	4B
Q2	4E	TP42	4E	R29	4F	R75	3B	R147	2D	C82	2E
Q3	4F	TP43	4E	R30	4F	R77	3B	R174	2E	C83	3E
Q5	4C	TP44	4E	R31	2B	R78	4B	R210	3C	C87	2E
Q6	4C	TP52	4F	R35	4D	R79	4B	R211	2B	C88	3B
Q13	3B	TP54	4E	R36	4D	R80	2C	R214	3B	C89	3B
D201	3B	TP55	4E	R37	3D	R82	3E	C4	4E	C92	3B
L2	2D	TP56	3E	R38	4D	R84	3E	C5	3F	C98	2B
L3	2D	TP57	4E	R42	2D	R85	4C	C6	4F	C106	4B
L4	3E	TP74	3C	R43	4F	R86	4C	C14	3E	C113	3C
L5	3E	TP77	3C	R44	3F	R89	2C	C21	3E	C118	4C
L6	3B	TP100	2E	R46	3D	R90	2B	C35	3E	C119	2C
L7	4B	TP101	2E	R48	2E	R93	2B	C46	3E	C120	4C
L9	2B	TP103	2E	R50	2E	R95	3D	C47	4B	C121	2D
L10	2B	TP110	4C	R55	3D	R98	2B	C48	4B	C123	4B
L11	4B	TP111	4C	R56	2C	R99	2C	C50	4D	C128	2E
L14	4A	TP122	4E	R58	3E	R100	2D	C55	4E	C134	3C
CN1	4E	TP123	3E	R59	3E	R103	2B	C56	4E	C139	3E
CN4	3A	TP148	3E	R60	3D	R107	3B	C58	2D	C154	3D
CN8	4C	TP149	3E	R61	3B	R108	2D	C62	2E	C155	3D

ELECTRONIC PARTS LOCATION											
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IC1	2L	R14	2K	R111	2H	C11	2K	C41	2J	C97	4H
IC72	4J	R15	2K	R112	2H	C12	2L	C42	2J	C99	4J
Q10	2H	R16	2K	R114	4I	C13	2L	C45	3K	C100	4H
Q11	2I	R17	2L	R115	4I	C15	3J	C51	2J	C101	4H
D5	2I	R18	2K	R116	4J	C16	2K	C52	2I	C102	4H
D6	1I	R19	2K	R117	4J	C17	3K	C53	3L	C103	4H
D9	5I	R20	2K	R121	4I	C18	3K	C57	3K	C110	3L
VR1	2G	R23	3K	R122	5H	C19	2L	C59	3L	C111	3K
TH1	2K	R25	2K	R124	4I	C20	2L	C60	2H	C112	4I
L1	3L	R28	3K	R125	4I	C22	4K	C61	3K	C114	4I
L8	2H	R32	3K	R130	5H	C23	3L	C64	2K	C115	4I
L12	3I	R34	3K	R131	4J	C24	2K	C65	2K	C117	2H
L13	4G	R45	3K	R132	4H	C25	3K	C71	4K	C122	2L
L15	4I	R47	4K	R134	4H	C26	3K	C72	4J	C129	2K
X1	3I	R49	3L	R135	4H	C28	3L	C84	4K	C133	2I
X2	3J	R67	4J	R143	4J	C29	2L	C85	4J	C138	2I
CP6	5K	R76	4H	R201	4H	C30	3L	C86	2K	C140	3G
R1	2K	R81	4J	R212	4G	C31	3L	C90	3J	C141	4I
R2	4I	R83	4J	R213	3H	C32	3K	C91	4J	C142	4I
R10	2K	R87	4I	R215	4G	C33	4J	C93	3H	C143	4I
R11	4J	R104	4H	C1	2K	C34	4I	C94	4H		
R12	4K	R105	4H	C7	2L	C37	2K	C95	4H		
R13	2I	R109	4J	C8	2K	C40	2I	C96	3H		

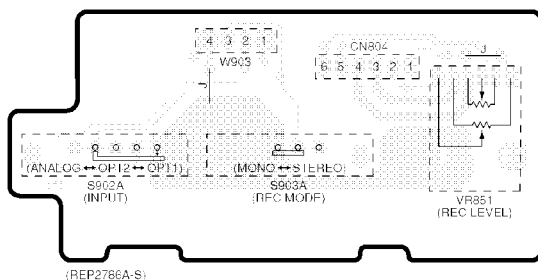




A B C D E F

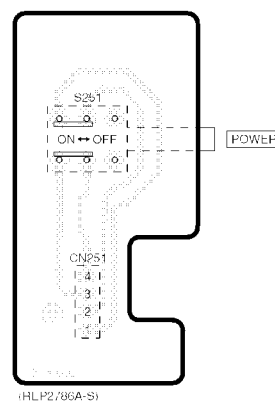
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F OPERATION (2) P.C.B.



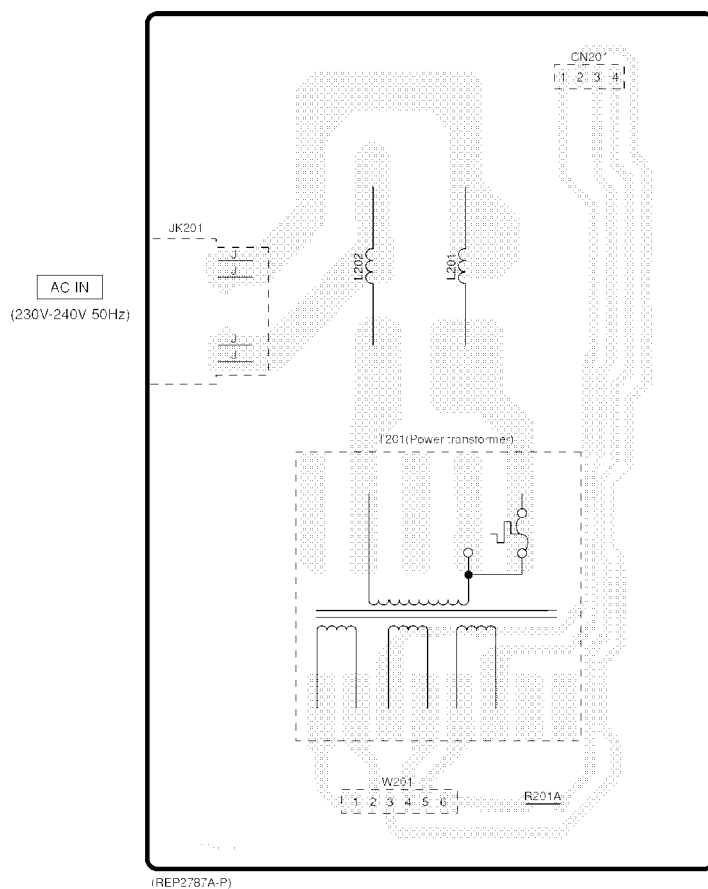
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I POWER SW P.C.B.



3

J POWER TRANSFORMER P.C.B.



5

ELECTRICAL PARTS LOCATION

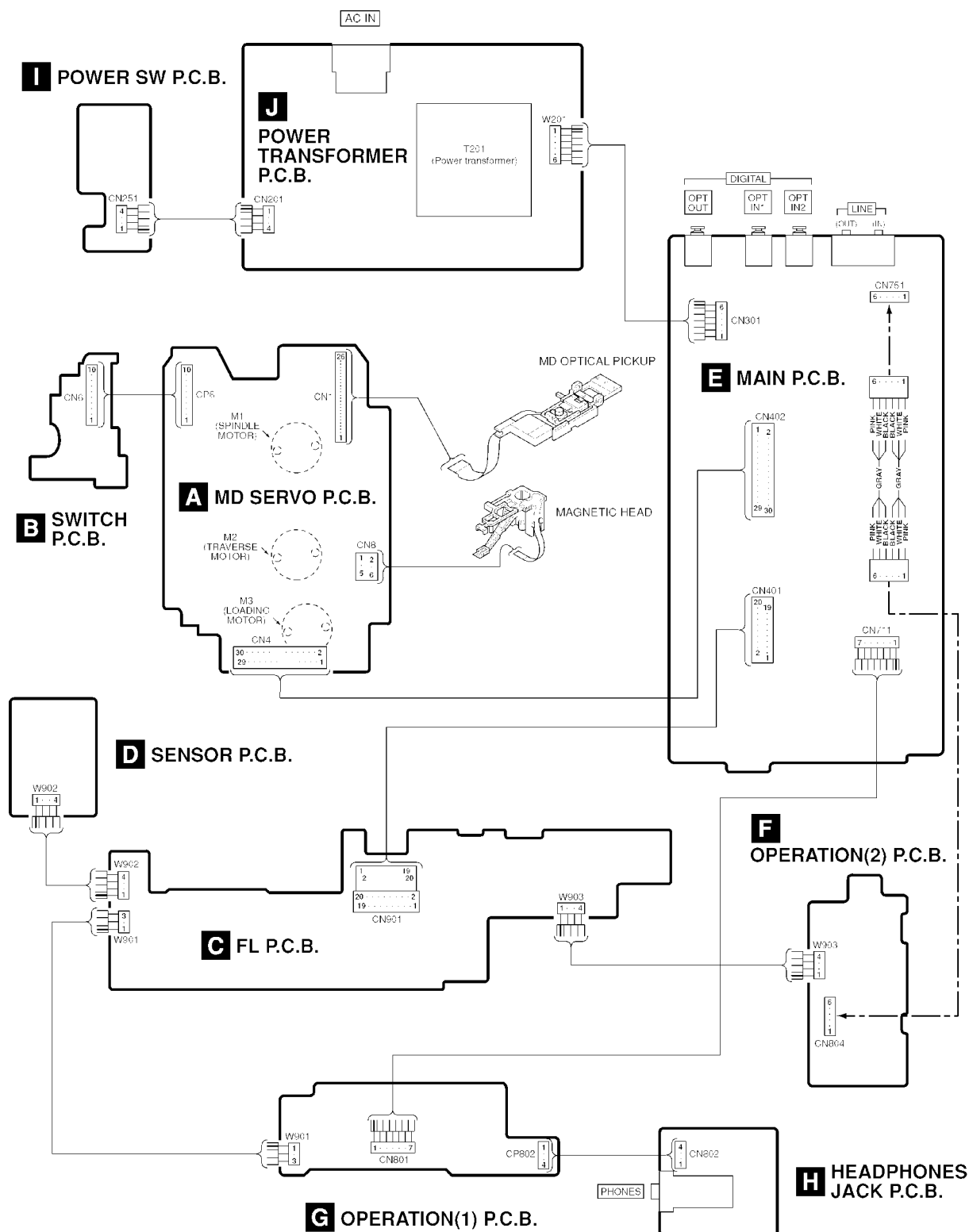
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VR851	2C	CN804	2C
S902A	2B	W903	2B
S903A	2C		
I POWER SW P.C.B.			
S251	2E	CN251	3E
J POWER TRANSFORMER P.C.B.			
L201	5C	JK201	5B
L202	5C	T201	7C
CN201	4D	R201A	8D
W201	8C		

6

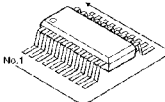
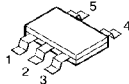
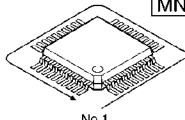
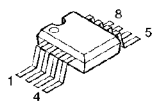
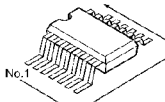
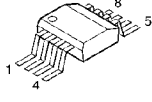
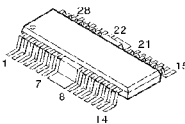
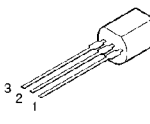
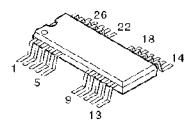
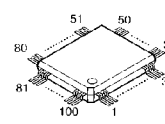
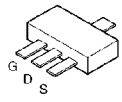
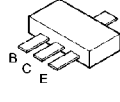
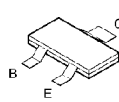
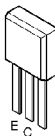
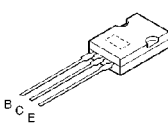
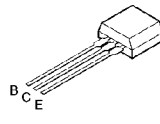
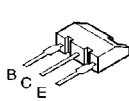
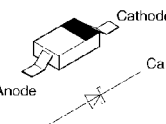
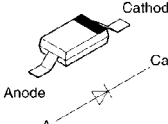
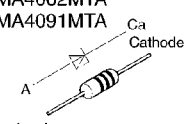
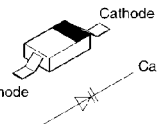
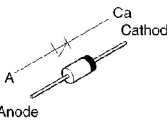
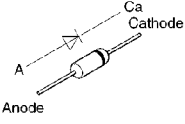
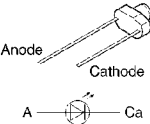
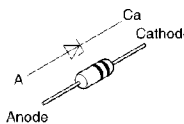
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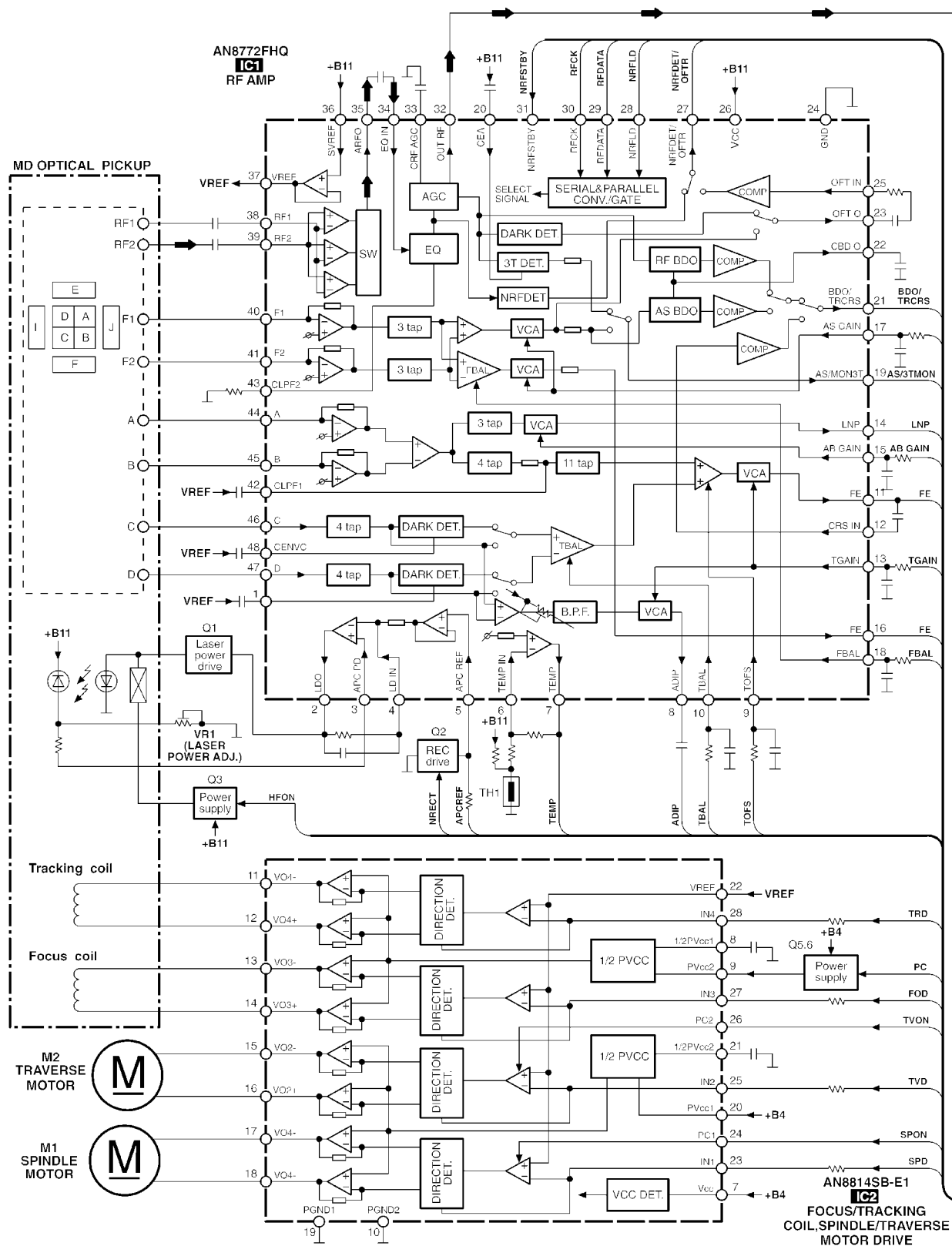
Wiring Connection Diagram

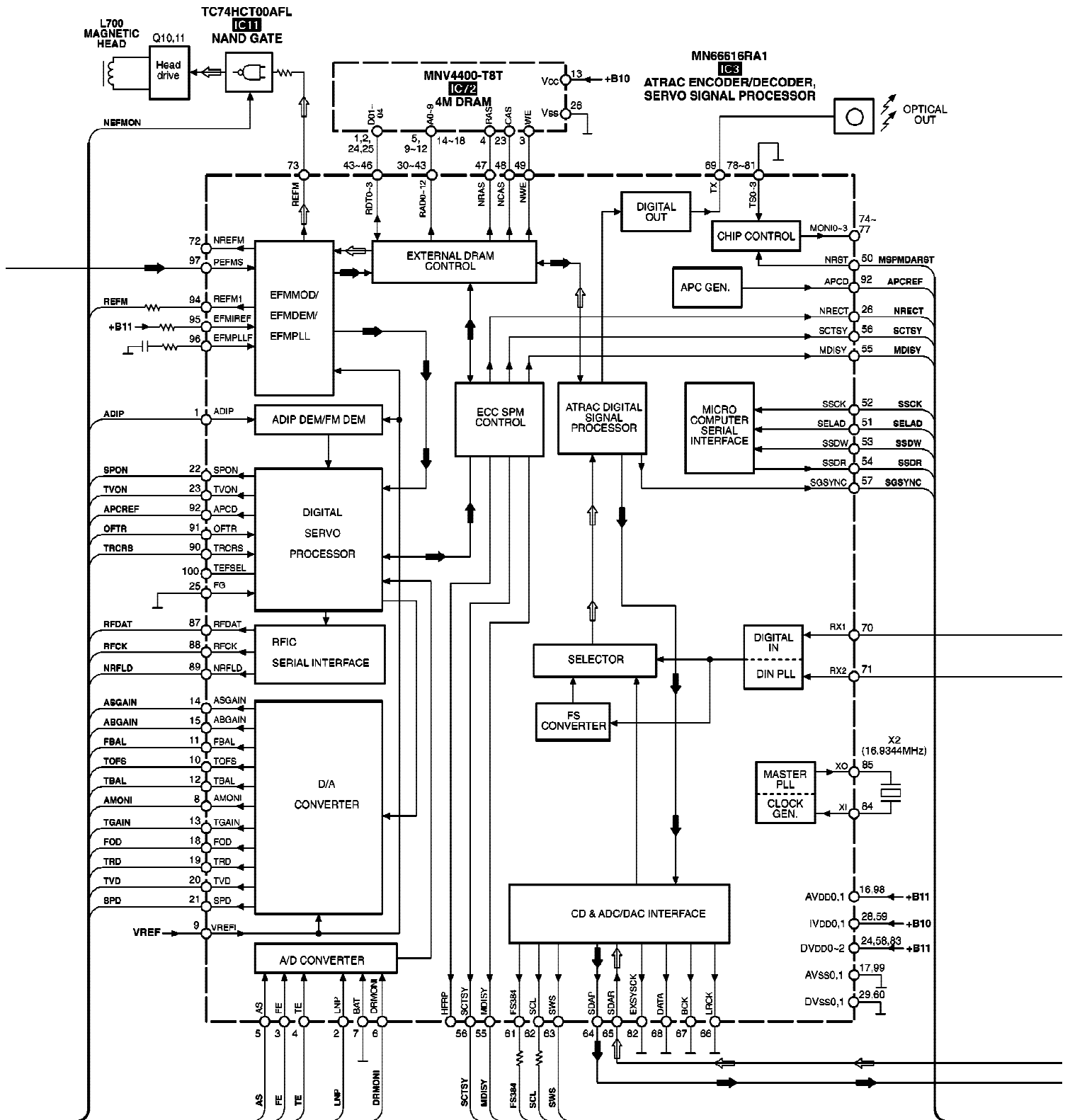


■ Type Illustration of IC's Transistors and Diodes

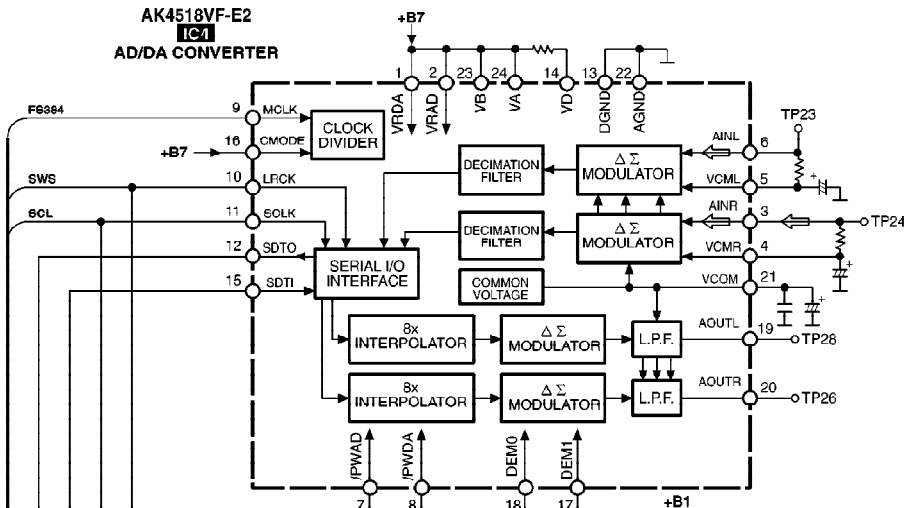
 <table><tr><td>AK4518VF-E2</td><td>24PIN</td></tr><tr><td>AK4520AVF-E1</td><td>28PIN</td></tr><tr><td>LB1830MS-TLM</td><td>10PIN</td></tr><tr><td>M5218AFPE3</td><td>8PIN</td></tr></table>	AK4518VF-E2	24PIN	AK4520AVF-E1	28PIN	LB1830MS-TLM	10PIN	M5218AFPE3	8PIN	 RN5RG33AA-TL RN5RZ26BA-TR	 <table><tr><td>AN8772FHQ</td><td>48PIN</td></tr><tr><td>MN101DF03DAA</td><td>80PIN</td></tr><tr><td>MN66616RA1</td><td>100PIN</td></tr></table>	AN8772FHQ	48PIN	MN101DF03DAA	80PIN	MN66616RA1	100PIN	 BA4560FE2
AK4518VF-E2	24PIN																
AK4520AVF-E1	28PIN																
LB1830MS-TLM	10PIN																
M5218AFPE3	8PIN																
AN8772FHQ	48PIN																
MN101DF03DAA	80PIN																
MN66616RA1	100PIN																
 <table><tr><td>TC74HCT00AFL</td><td>14PIN</td></tr><tr><td>TC74HCT7007A</td><td>14PIN</td></tr><tr><td>TC74HC4050EL</td><td>16PIN</td></tr><tr><td>TC9246FELP</td><td>16PIN</td></tr></table>	TC74HCT00AFL	14PIN	TC74HCT7007A	14PIN	TC74HC4050EL	16PIN	TC9246FELP	16PIN	 TC7W04FTE12L	 AN8814SB-E1	 S81233SGY-Z	 MNV4400-T8T					
TC74HCT00AFL	14PIN																
TC74HCT7007A	14PIN																
TC74HC4050EL	16PIN																
TC9246FELP	16PIN																
 M30218MAA102	 BA05ST-V5	 2SJ278MYTR 2SK1764KYTR	 2SB1121ST-TD	 2SB1295-6-TB 2SB1462STX DTC114YETL	 2SD1450RSTTA												
 2SD2037EFTA	 2SA933SQRSTA DTA114ESTP DTA143ESTP DTC114ESTP		 2SB1240QRTV6 2SD1862QRTV6	 MA728TX	 SC80209TE12R												
 MA4051MTA MA4056MTA MA4062MTA MA4091MTA	 MA304TX	 1D3-E	 1SS254TA	 SLR325MCT31 SLR325VCT31	 MA4330MTA												

Wiring Connection Diagram

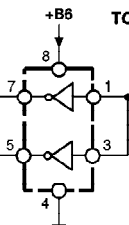




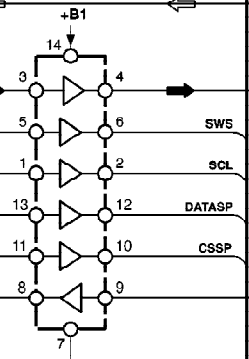
AK4518VF-E2
IC4
AD/DA CONVERTER



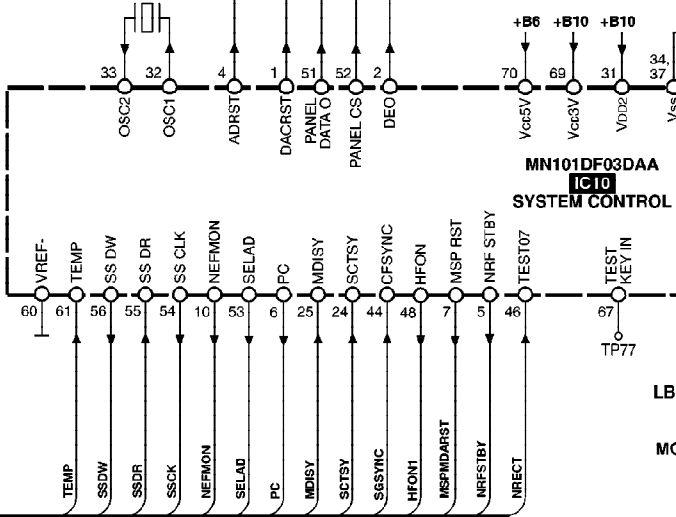
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IC6
INVERTER



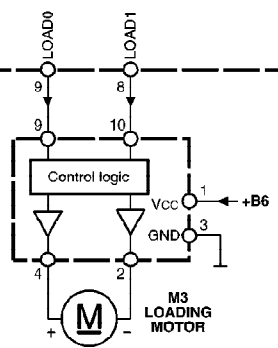
TC74HCT7007A
IC401
INTERFACE

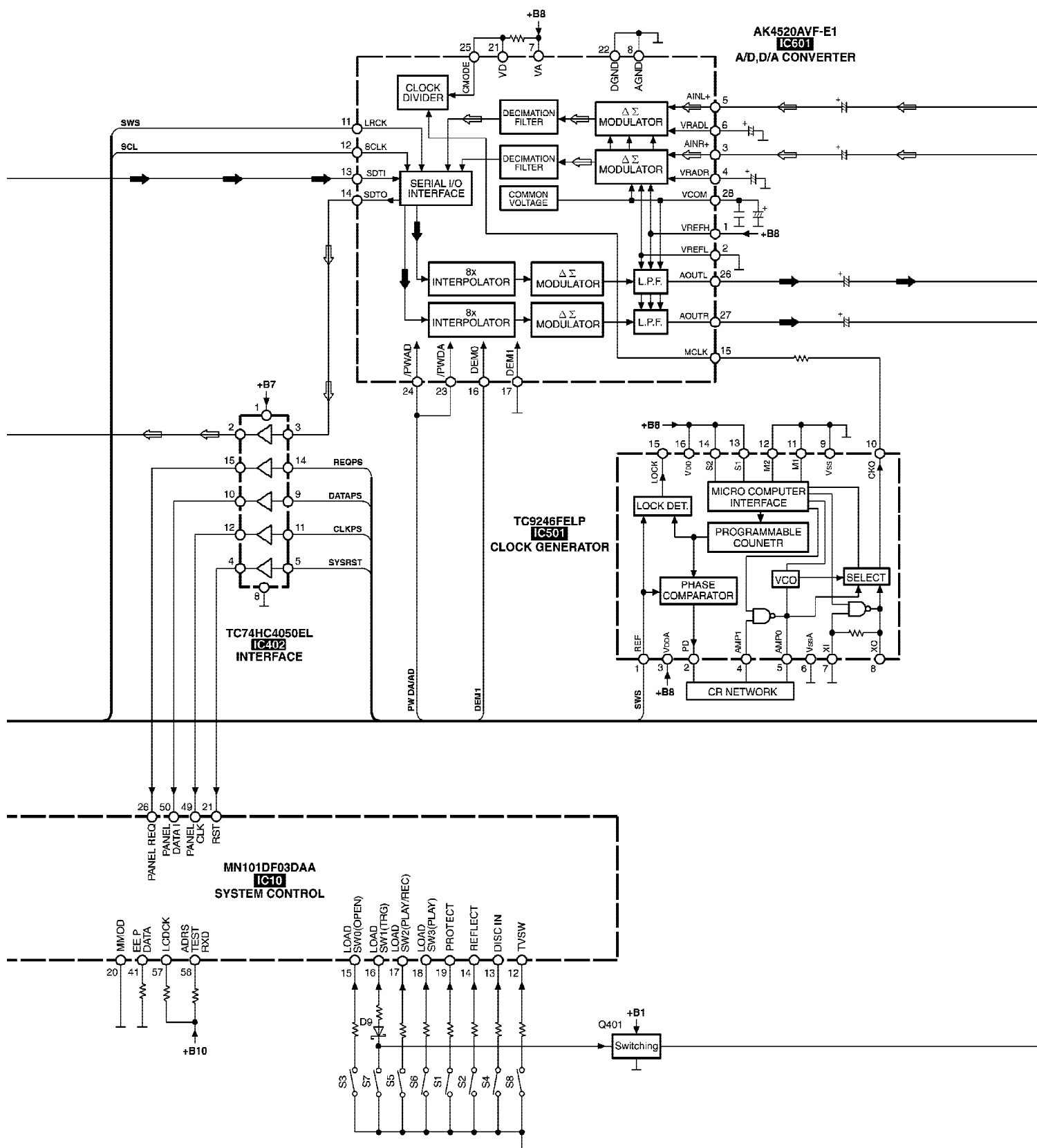


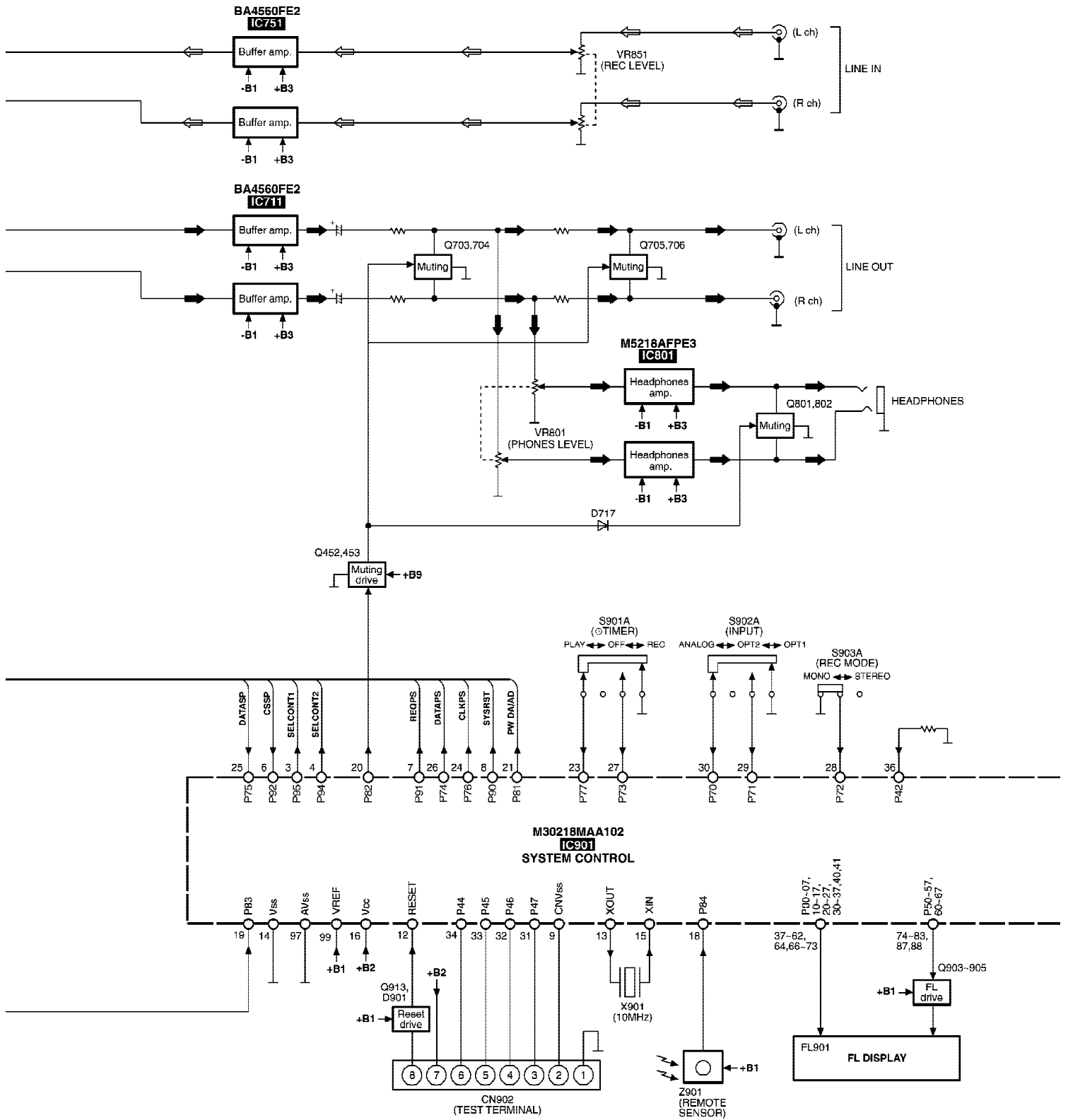
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IC10
SYSTEM CONTROL

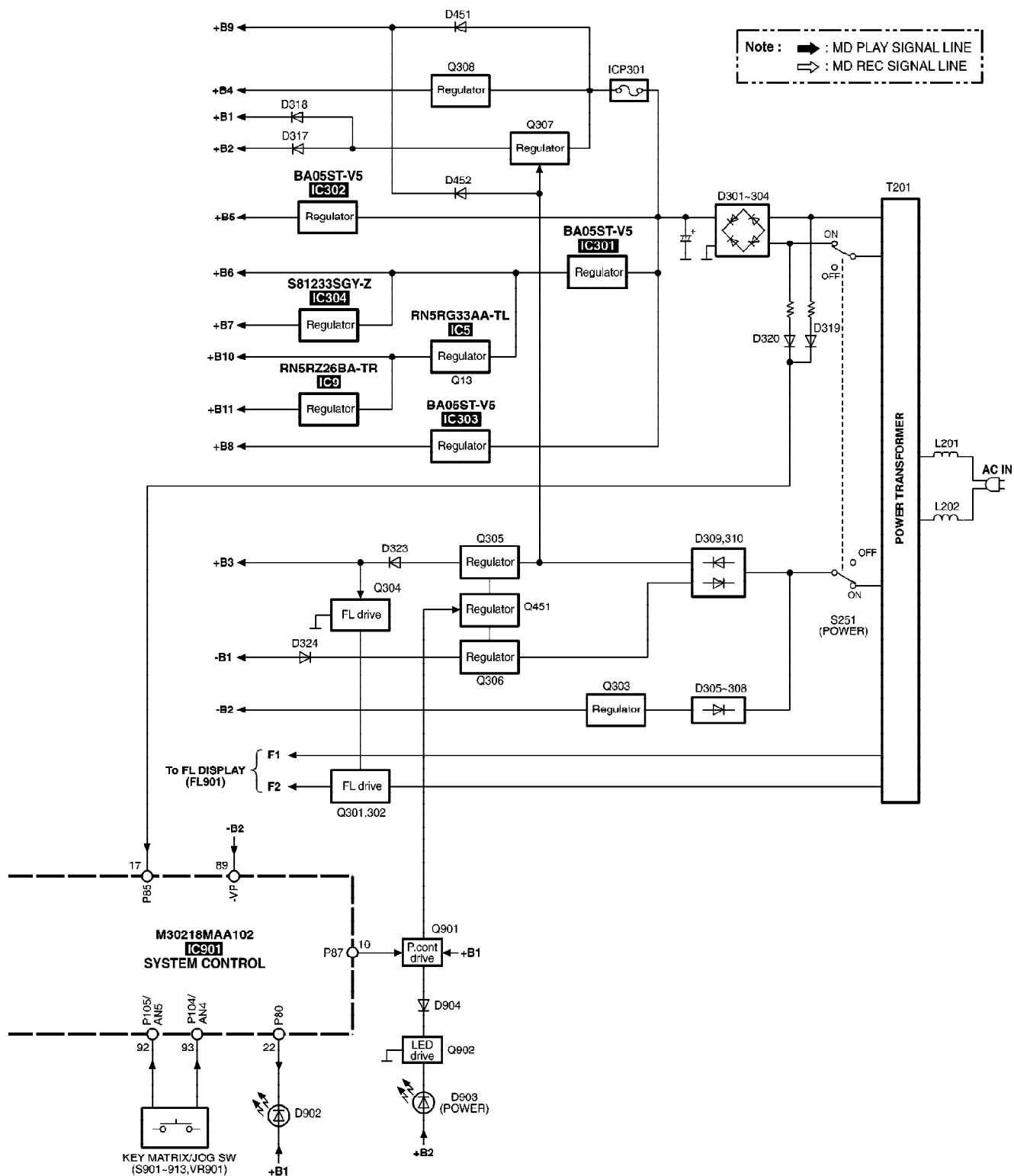


LB1830MS-TLM
IC92
LOADING MOTOR DRIVE









■ Terminal Function of IC's

● IC1 (AN8772FHQ): RF Amp

Pin No.	Terminal Name	I/O	Function
1	CENV D	I	D signal detection input
2	LDO	O	LD amp output terminal
3	APC PD	I	Photo diode detection input
4	LD IN	I	LD amp input terminal
5	APC REF	I	APC amp reference voltage input
6	TEMP IN	I	Temperature sensor amp input
7	TEMP	O	Temperature sensor amp output
8	ADIP	O	ADIP FM signal output
9	TOFS	I	Tracking error off-set adjustment input
10	TBAL	I	Tracking balance adjustment input
11	TE	O	Tracking error signal output
12	CRS IN	I	Track cross signal input
13	TGAIN	I	TE gain adjustment input
14	LNP	O	LNP signal output
15	AB GAIN	I	APP signal gain adjustment input
16	FE	O	Focus error signal output
17	AS GAIN	I	AS gain adjustment input
18	FBAL	I	Focus balance adjustment input
19	AS/MON3T	O	AS signal output
20	CEA	I	3T envelope detection input
21	BDO/TRCRS	O	AS dropout signal detect signal output/Track cross output terminal
22	CBD O	I	BDO detection input
23	OFT O	O	Off-track detection signal output terminal
24	GND	—	GND terminal

Pin No.	Terminal Name	I/O	Function
25	OFT IN	I	Off-track detection signal input
26	Vcc	I	Power supply terminal
27	NRFDET/ OFTR	O	RF detect signal output terminal/ Off-track signal output terminal
28	NRFLD	I	Serial command latch signal input
29	RF DATA	I	Serial command data signal input
30	RFCK	I	Serial command clock signal input
31	NRFSTBY	I	Stand by control signal input
32	OUT RF	O	EFM output
33	CRF AGC	O	RFAGC capacitor connect terminal
34	EQ IN	I	EQ input
35	ARFO	O	RF amp output
36	SVREF	I	Reference signal input
37	VREF	I	Reference voltage input
38	RF1	O	RF 1 signal output
39	RF2	I	RF 2 signal input
40	F1	I	F1 signal input
41	F2	I	F2 signal input
42	CLPF1	I	APP correction CPF capacitor connect terminal
43	CLPF2	I	RF equalizer adjustment resistor connect terminal
44	A	I	Main beam A signal input
45	B	I	Main beam B signal input
46	C	I	Main beam C signal input
47	D	I	Main beam D signal input
48	CENV C	I	C signal detection input

● IC3 (M66616RA1): ATRAC Encoder/Decoder, Servo Signal Processor

Pin No.	Terminal Name	I/O	Function
1	ADIP	I	ADIP FM signal input terminal
2	LNP	I	Lens position signal input
3	FE	I	Focus error signal input terminal
4	TE	I	Tracking error signal input terminal
5	AS	I	AS signal input
6	DRMONI	I	Drive voltage monitor input
7	BAT	I	Battery power supply terminal
8	AMONI	–	Servo analog monitor signal output (Not used, open)
9	VREFI	I	Reference voltage input terminal
10	TOFS	O	Tracking off-set adjustment output
11	FBAL	O	Focus balance adjustment output
12	TBAL	O	Tracking balance adjustment output
13	TGAIN	O	TE error gain adjustment output
14	ASGAIN	O	Main beam amp gain adjustment output
15	ABGAIN	O	APP adjustment output
16	AV _{DD1}	I	Power supply terminal
17	AV _{SS1}	–	GND terminal
18	FOD	O	Focus drive signal output terminal
19	TRD	O	Tracking drive signal output terminal
20	TVD	O	Traverse motor drive signal output terminal
21	SPD	O	Spindle motor drive signal output terminal
22	SPON	O	Drive IC spindle ON signal output terminal
23	TVON	O	Drive IC traverse ON signal output terminal
24	DV _{DD0}	I	Power supply terminal
25	FG	I	FG input terminal
26	NRECT	O	Rec/Play switching signal output
27	IVDD2	–	Power supply for I/O pad
28	IVDD0	–	Power supply for I/O pad

Pin No.	Terminal Name	I/O	Function
29	DV _{SS0}	–	GND terminal
30~32	RAD12~10	–	DRAM address output terminal (Not used, open)
33~42	RAD9~0	O	DRAM address output terminal
43~46	RDT3~0	I/O	DRAM data input/output terminal
47	NRAS	O	DRAM row address strobe output terminal
48	NCAS	O	DRAM column address strobe output terminal
49	NWE	O	DRAM write enable output terminal
50	NRST	I	Reset signal input
51	SELAD	I	MSP/MDA, I/F address select input terminal ("H" : Address)
52	SSCK	I	MSP/MDA, I/F clock input terminal
53	SSDW	I	MSP/MDA, I/F write data input terminal
54	SSDR	O	MSP/MDA, I/F read data output terminal
55	MDISY	O	Leader synchronous signal output
56	SCTSY	O	ADIP synchronous noise output terminal
57	SGSYNC	O	Frame synchronous signal output terminal
58	DV _{DD1}	I	Power supply terminal
59	IVDD1	–	Power supply for I/O pad
60	DV _{SS1}	–	GND terminal
61	FS384	O	384 Fs output terminal
62	SCL	O	Bit clock output terminal
63	SWS	O	Word clock output terminal
64	SDAP	O	Audio data output terminal
65	SDAR	I	Audio data input terminal
66	LRCK	I	CD word clock input terminal
67	BCK	I	CD bit clock input terminal
68	DATA	I	CD data input terminal
69	TX	O	Digital audio interface signal output terminal
70	RX1	I	Digital audio interface signal 1 input terminal

Pin No.	Terminal Name	I/O	Function
71	RX2	I	Digital audio interface signal 2 input terminal
72	NREFM	–	EFM modulation inverted output (Not used, open)
73	REFM	O	EFM modulation output terminal
74	MONI3	–	Monitor signal output (Not used, open)
75	MONI2	–	Monitor signal output (Not used, open)
76	MONI1	–	Monitor signal output (Not used, open)
77	MONI0	–	Monitor signal output (Not used, open)
78	TS3	–	Reserved (Not used, connected to GND)
79	TS2	–	Reserved (Not used, connected to GND)
80	TS1	–	Reserved (Not used, connected to GND)
81	TS0	–	Reserved (Not used, connected to GND)
82	EXSYSCK	–	External system clock input (Not used, connected to GND)
83	DV _{DD} 2	I	Power supply terminal
84	XI	I	Crystal oscillator (16.9344MHz)
85	X0	O	

Pin No.	Terminal Name	I/O	Function
86	VD _{SS} 2	–	GND terminal
87	RFDAT	O	RF serial data output
88	RFCK	O	RF serial clock output
89	NRFLD	O	RF serial load output
90	TRCRS	I	Track cross input terminal
91	OFTR	I	Off-track signal input terminal
92	APCD	O	Laser power PWM output
93	EXEFMCK	I	External FM clock input (Not used, connected to GND via resistor)
94	PEFM1	O	EFM loop filter output
95	EFMIREF	I	EFM PLL reference current input
96	EFMPLL	O	EFM PLL filter output
97	PEEMS	I	EFM signal input
98	AV _{DD} 0	I	Power supply terminal
99	AV _{SS} 0	–	GND terminal
100	TEFSEL	–	Not used, open

● IC10 (MN101DF03DAA): System Control

Pin No.	Terminal Name	I/O	Function
1	DAC RST	O	DAC reset signal output terminal ("L" : reset)
2	DEO	O	DE emphasis signal output terminal ("L" : DE Emphasis)
3	MUTE	—	Muting signal output terminal (Not used, open)
4	AD RST	O	AD reset signal output terminal ("L" : reset)
5	NRF STBY	O	RF amp stand by control signal output terminal
6	PC	O	Power supply control output terminal ("H" : Power ON)
7	MSP RST	O	Reset signal output
8	LOAD1	O	Loading motor drive 1 output terminal
9	LOAD0	O	Loading motor drive 0 output terminal
10	NEFMON	O	Recording head current output
11	TEST01	—	Test terminal (Not used, open)
12	TV SW	I	Rest detect input terminal
13	DISC IN	I	Disc in detect input terminal
14	REFLECT	I	Reflect detect input terminal
15	LOADSW0 (OPEN)	I	Load OPEN detect input terminal
16	LOADSW1 (TRG)	I	Load TRG detect input terminal
17	LOADSW2 (PLAY/REC)	I	Load PLAY/REC detect input terminal
18	LOADSW3 (PLAY)	I	Load PLAY detect input terminal
19	PROTECT	I	Prevention tab detect signal input
20	MMOD	—	Not used, connected to GND
21	RST	I	Reset signal input terminal
22	UNITTEST	—	Test signal input terminal (Not used, open)
23	CS2	—	Test signal input terminal (Not used, open)
24	SCTSY	I	ADIP synchronous noise input terminal
25	MDISY	I	Header synchronous signal input
26	PANEL REQ	I	Panel I/F request signal output terminal
27	LED OUT1	O	STOP LED signal output terminal ("H" : STOP)
28	LED OUT2	O	PLAY LED signal output terminal ("H" : PLAY, REC)

Pin No.	Terminal Name	I/O	Function
29	LED OUT3	O	REC LED signal output terminal ("H" : REC)
30	TEST02	—	Test terminal (Not used, open)
31	V _{DD2}	I	Power supply terminal
32	OSC1	I	Crystal oscillator (f=10.02MHz)
33	OSC2	O	
34	Vss	—	GND terminal
35	XI	—	Not used, connected to GND
36	XO	—	Not used, open
37	Vss	—	GND terminal
38	TEST03	—	Test terminal (Not used, open)
39	EEPCS	—	EE PROM chip select output terminal (Not used, open)
40	EEPCK	—	EE PROM clock output terminal (Not used, open)
41	EEP DATA	I/O	EE PROM data input/output terminal (Not used, connected to GND via resistor)
42	TEST04	—	Test terminal (Not used, open)
43	TEST05	—	Test terminal (Not used, open)
44	CF SYNC	I	MDA synchronous signal input terminal
45	TEST06	—	Test terminal (Not used, open)
46	TEST07	—	Test terminal (Not used, open)
47	TOK OK	—	Test terminal (Not used, open)
48	HF ON	O	HF module ON signal output
49	PANEL CLK	I	PANEL I/F clock input terminal
50	PANEL DATAI	I	PANEL I/F data input terminal
51	PANEL DATAO	O	PANEL I/F data output terminal
52	PANEL CS	O	PANEL I/F/ Chip select output terminal
53	SELAD	O	MSP/MDA, I/F address select output terminal ("H" : Address)
54	SS CLK	O	MSP/MDA, I/F clock output terminal
55	SS DR	I	MSP/MDA, I/F read data input terminal
56	SS DW	O	MSP/MDA, I/F write data output terminal

Pin No.	Terminal Name	I/O	Function
57	LCDCK	O	LCD clock test signal output terminal
58	ADRS TEST RXD	–	Test terminal (Not used, open)
59	LCD DATA TXD	–	Test terminal (Not used, open)
60	VREF–	I	Reference voltage (–) input terminal
61	TEMP	I	Temperature sensor input terminal
62	KEY1	I	Operation key signal input
63	KEY2	I	Operation key signal input
64	MOLOAD	–	Test signal input terminal (Not used, open)
65	SRV TEST	–	Test signal input terminal (Not used, open)
66	LOAD P	–	Test signal input terminal (Not used, open)
67	TEST KEY IN	–	Test signal input terminal (Not used, open)
68	SRV LOAD	–	Test signal input terminal (Not used, open)

Pin No.	Terminal Name	I/O	Function
69	Vcc3V	I	Power supply terminal
70	Vcc5V	I	Power supply terminal
71	SEL ADDA	I	AD/DA convertor select signal input
72	SLOCK	–	Spindle lock output terminal (Not used, open)
73	TLOCK	–	Tracking lock output terminal (Not used, open)
74	FLOCK	–	Focus lock test signal output terminal (Not used, open)
75	ERROR	–	Servo error test signal output terminal (Not used, open)
76	BUSY	–	Servo busy test signal output terminal (Not used, open)
77	SBPRETRY	–	Signal dispose test signal output terminal (Not used, open)
78	SRVRETRY	–	Servo retry test signal output terminal (Not used, open)
79	ARDSKIP	–	Address skip test signal output terminal (Not used, open)
80	SPMWE	–	SPM test signal output terminal (Not used, open)

● IC2 (AN8814SB-E1): Focus/Tracking Coil, Spindle/Traverse Motor Drive

Pin No.	Terminal Name	I/O	Function
1	REG B	–	3.3 V external transistor control (Not used, open)
2	REG M	–	3.3 V regular output monitor (Not used, connected to GND)
3	NC	–	Not used, open
4	OPO	O	Op-amp output
5	OP–	O	Op-amp invert output
6	OP+	O	Op-amp non-invert output (Not used, connected to GND)
7	Vcc	I	Power supply terminal
8	1/2 PVcc2	O	1/2 PVcc output terminal 1 (Connected to GND via capacitor)
9	PVcc2	I	Power supply terminal for driver
10	PGND2	–	GND terminal
11	VO4–	O	Tracking coil driver output terminal
12	VO4+	O	Tracking coil driver output terminal
13	VO3–	O	Focus coil driver output terminal
14	VO3+	O	Focus coil driver output terminal

Pin No.	Terminal Name	I/O	Function
15	VO2–	O	Traverse motor drive output terminal
16	VO2+	O	Traverse motor drive output terminal
17	VO1–	O	Spindle motor drive output terminal
18	VO+	O	Spindle motor drive output terminal
19	PGND1	–	GND terminal
20	PVcc1	I	Power supply terminal
21	1/2 PVcc1	O	1/2 PVcc output terminal 1 (Connected to GND via capacitor)
22	VREF	I	Reference voltage input
23	IN1	I	Spindle motor drive input terminal
24	PC1	I	Power cut 1 input terminal
25	IN2	I	Traverse motor drive input terminal
26	PC2	I	Power cut 2 input terminal
27	IN3	I	Focus drive input terminal
28	IN4	I	Tracking drive input terminal

● IC901 (M30218MAA102): System Control/FL Display

Pin No.	Terminal Name	I/O	Function
1	P97	—	Not used, connected to GND
2	P96	—	Not used, connected to GND
3	P95	O	Digital in 1 ON signal output
4	P94	O	Digital in 2 ON signal output
5	P93	—	Not used, connected to GND
6	P92	I	Chip select signal input
7	P91	O	Request signal output
8	P90	O	Reset signal output terminal
9	CNVss	O	Flash ROM write power supply
10	P87	—	Power supply ON/OFF output terminal
11	P86	—	Not used, connected to GND
12	/RESET	I	Reset signal input terminal ("L" : Reset)
13	XOUT	O	Crystal Oscillator output
14	Vss	—	Not used, open
15	XIN	I	Crystal Oscillator input
16	Vcc	I	Power supply terminal
17	P85	I	AC detect input terminal
18	P84	I	Remote control transmitter signal input terminal
19	P83	I	LOADSW signal input terminal
20	P82	O	Audio mute signal output ("H" : Mute)
21	P81	O	DA/AD power control output terminal
22	P80	O	JOG LED ON/OFF signal output terminal
23	P77	I	Timer play signal input terminal
24	P76	O	Communication clock signal output to syscon
25	P75	I	Data signal input from syscon
26	P74	O	Data signal output to syscon
27	P73	I	Timer REC signal input terminal ("L" : TIMER REC)
28	P72	I	MONO/STEREO select signal input terminal ("L" : MONO)

Pin No.	Terminal Name	I/O	Function
29	P71	I	Digital 1/2 select signal input terminal ("L" : DIGITAL 1)
30	P70	I	Analog signal input terminal ("L" : ANALOG)
31~34	P47~P44	—	Flash ROM data signal output (Not used, connected to GND via resistor)
35	P43	—	Not used, connected to GND
36	P42	—	Model select signal input terminal
37,38	P41,P40	O	FL segment signal output
39~46	P37~P30	O	FL segment signal output
47~54	P27~P20	O	FL segment signal output
55~62	P17~P10	O	FL segment signal output
63	Vcc	I	Power supply terminal
64	P07	O	FL segment signal output
65	Vss	—	GND terminal
66~72	P06~P00	O	FL segment signal output
73~80	P57~P50	O	FL grid signal output
81~88	P67~P60	O	FL grid signal output
89	—VP	I	Power supply terminal
90	P107/AN7	—	Not used, connected to GND
91	P106/AN6	—	Not used, connected to GND
92	P105/AN5	I	Operation key signal input terminal
93	P104/AN4	I	Operation key signal input terminal
94	P103/AN3	—	Not used, connected to GND
95	P102/AN2	—	Not used, connected to GND
96	P101/AN1	—	Not used, connected to GND
97	AVss	—	GND terminal
98	P100/AN0	—	Not used, connected to GND
99	VREF	I	Reference voltage input terminal
100	AVcc	I	Power supply terminal

■ Measurements and Adjustments

Note: Because this unit uses the optical magnetic recording, the unit outputs over 10 times more laser than a CD player does. In the adjustment mode, the laser is always being output. Therefore, be especially careful not to look laser beam directly or to touch the laser beam when adjusting the unit and checking its operation.

Laser Power Adjustment

Adjust each laser power: read power for reading (play) and write power for writing (record).

Cautions

1. About handling the MD unit

- The magnetic head is a precision unit and is very fragile. Do not deform it.
- Laser diode in the optical pickup may be destroyed by the static electricity generated in your clothes or body. Be especially careful with the static electricity.
- The optical pickup is structured extremely precisely. Do not subject to the strong impact or shock. Do not touch the lens.

2. About handling the magnetic head

When replacing the magnetic head, do not tighten the mounting screw (RD17022) too firmly. If the screw is tightened too much to deform the resin, the position of the head is moved, and this affects its recording operation.

Recommended torque for mounting screw: $700 \text{ g} \cdot \text{cm} \pm 100 \text{ g} \cdot \text{cm}$

Reference: This is the same force as using a screwdriver with a 15-mm diameter grip, you fasten the screw naturally with your thumb and index finger.

3. About the driver for adjusting laser power

Use only insulated driver such as a ceramic driver. With the metal driver, it is not possible to adjust properly because of the induction noise. Also, if it short-circuits with the chassis, it may destroy or damage the laser diode.

• Special tool

- Laser power meter or cartridge type laser power meter
- Playback/record MD (musical program MD)
- Remote control transmitter
- Test disc (RFKV0006)
- Insulated driver such as a ceramic driver

• Set the unit to the adjustment mode.

1. Supply power to the unit.
2. With no MD loaded in the player, simultaneously press the [■ STOP] button and the [▶▶ FWD.SEARCH] button and hold them both pressed for at least 2 seconds until "MD TEST" appears in the display. (see Fig. 1)

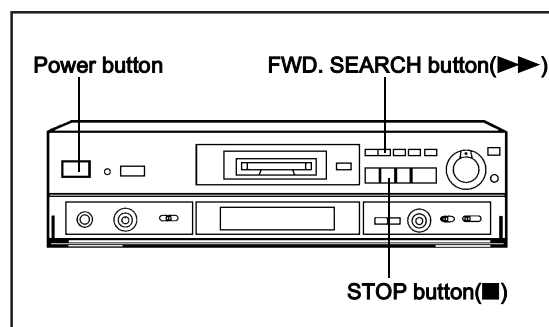


Fig. 1

Cautions

- The optical pickup and the magnetic head are structured precisely; therefore, they are very fragile. Be careful not to touch them with the edge of the laser power meter.
- The sensor of the laser power meter is a very fine part. Be careful not to touch it to the optical pickup lens.
- The focus point of the laser reaches to 180°C. Therefore, avoid adjusting using laser power for a long time because the sensor of the laser power meter may be burned.
- Do not allow the write power to even momentarily reach or exceed 7.5 mW. Doing so will result in damage to the optical pickup.
- Do not set the unit to the laser power adjustment mode with the MD loaded. Doing so may result in damage to the MD.

• Adjustment procedure

Note: There are two methods of adjusting the player, either by using a laser power meter or by using a cartridge type laser power meter.

1. With no MD loaded in the player, press "1" on the player's remote control.
"RAM LASER" will be displayed to indicate the read power adjustment mode.
2. If using a laser power meter, slide open the sensor cover (see Fig. 1).
3. If using a laser power meter, position the sensor directly above the optical pickup (see Fig. 2).
If using a cartridge type laser power meter, load the cartridge into the MD mechanism (see Fig. 3).
4. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range. If it is not within the specified range, adjust by turning VR1 (see Fig. 4).

Specified range (read power): 600 μ W or lower

Caution:

- Proceeding on to the subsequent adjustment procedure with the read power exceeding 600 μ W will result in damage to the optical pickup.

5. Press "2" on the player's remote control.
"WRITE LASER" will be displayed to indicate the write power adjustment mode.
6. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range. If it is not within the specified range, adjust by turning VR1 (see Fig. 4).

Specified range (write power): 4.8 $\pm$ 0.1 mW

Caution:

- Do not allow the write power to even momentarily reach or exceed 5.5 mW. Doing so will result in damage to the optical pickup.

7. Press "3" on the player's remote control.
"ROM LASER" will be displayed to indicate the ROM data confirmation mode.
8. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range.

Specified range (ROM data laser power): 540 $\pm$ 660 μ W

9. Press "1" on the player's remote control.
"RAM LASER" will be displayed to indicate the RAM data confirmation mode.
10. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range.

Specified range (RAM data laser power): 540 $\pm$ 660 μ W

- * If the reading in either step 8 or 10 above is not within the specified range, first switch off the power, and then reset the unit to the adjustment mode and repeat the adjustment procedure.

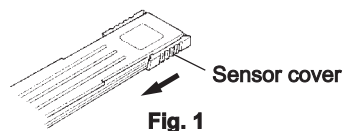


Fig. 1

Caution:

Do not allow the laser power meter to come in contact with either the optical pickup or the magnetic head.

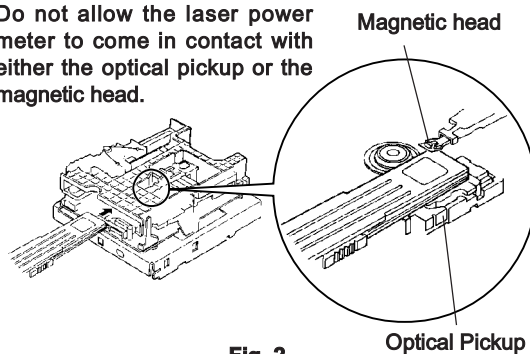


Fig. 2

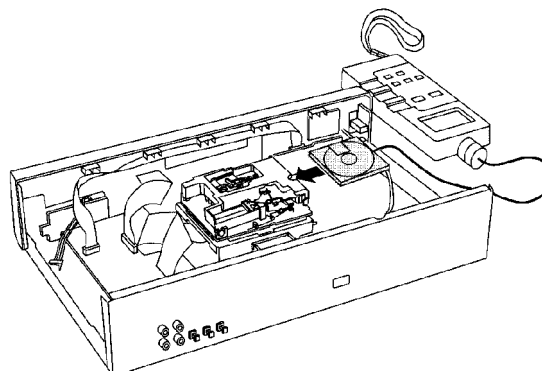


Fig. 3

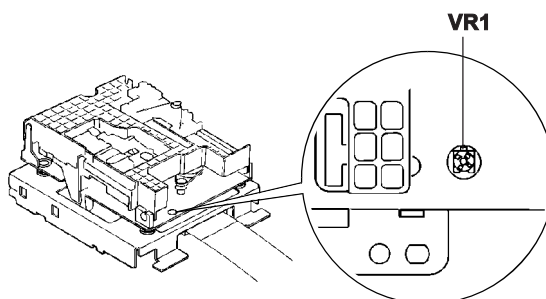


Fig. 4

■ Replacement Parts List

Notes: * Important safety notice:

Components identified by Δ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-(resistors), etc. are used. When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)

* ALL parts are supplied by MESA.

* [MAVD] indicates in Remarks columns parts that are supplied by MAVD.

* The "<IA> <IB> <IC> <ID> <IE>" marks in Remarks indicate language of instruction manual.

<IA>: English, Spanish, Swedish

<IB>: Germany, Italian, French

<IC>: English

<ID>: Russian, Polish, Czech

<IE>: Dutch, Danish

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RHD30035-K	SCREW	4	
2	RKM0152-K	TOP CABINET	1	
3	XTBS3+8JFZ1	SCREW	1	
4	REX0845	WIRE ASS'Y	1	[MAVD]
5	REZ1159	FLAT CABLE (30P)	1	[MAVD]
6	REZ1160	FLAT CABLE (20P)	1	[MAVD]
7	RHD30053	SCREW	3	
8	RKA0040B-K1	FOOT	4	
9	RYF0501-Q	DOOR UNIT	1	[MAVD]
9-1	RGK1111-K	NUT	4	[MAVD]
9-2	RHD26033	SCREW	4	[MAVD]
9-3	XTS2+4GFZ	SCREW	4	
10	RDG0449	GEAR	2	[MAVD]
11	RYP8592-K	FRONT PANEL ASS'Y	1	[MAVD]
12	RGK0977-1S	MD LID	1	[MAVD]
13	RGK1112-S	ORNAMENT	1	[MAVD]
14	RGK1113-S	MD SLOT ORNAMENT	1	[MAVD]
15	RGU0890-1K	BUTTON,POWER	1	[MAVD]
16	RGU1709-K	BUTTON,MAIN	1	[MAVD]
17	RGU1712-K	BUTTON,OPEN	1	[MAVD]
18	RGU1714-S	BUTTON,PLAY MODE	1	[MAVD]
19	RGV0112-S	KNOB,SLIDE	3	[MAVD]
20	RGW0308-K	KNOB,JOG	1	[MAVD]
21	RGW0310-S	KNOB,VOLUME	2	[MAVD]
22	RHD20010	SCREW	1	
23	RHD26021	SCREW	14	
24	RHD26034	SCREW	3	[MAVD]
25	RHN70002	NUT	1	
26	RMB0514	SPRING	1	
27	RKG0009	MAGNET	1	
28	RME0284	SPRING	1	[MAVD]
29	XTBR3+20JFZ	SCREW	2	
30	XTBS3+8JFZ1	SCREW	15	
31	XTB3+10JFZ	SCREW	4	
101	RHD17021	SCREW	1	
102	RHD17022	SCREW	1	
103	RMC0348	SPRING	1	
104	RMC0349	SPRING	1	
105	RML0515	HEAD GUIDE	1	
106	RMQ0750	BASE	1	
107	RMQ0751	NUT PLATE	1	
108	RMS0611	SHAFT	1	
109	RXJ0021	GUIDE SHAFT	1	
110	RXK0249	CHASSIS	1	
110-1	RDV0055	BELT	1	
110-2	REM0077	MOTOR 1	1	
110-3	REM0078	MOTOR 2	1	
110-4	RMB0548	SPRING	1	
110-5	RMQ0752	DETECTOR PIN 1	1	
110-6	RMQ0753	DETECTOR PIN 2	2	
110-7	XQN17+C25FZ	SCREW	4	
110-8	XYC2+FF105	SCREW	1	
111	RAF1700A	OPTICAL PICK UP	1	
112	XTW2+6S	SCREW	1	
113	RHD20053	SCREW	4	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
114	RMB0504	SPRING	4	
115	RMG0447-K	DAMPER RUBBER	4	
116	XTN17+6GFZ	SCREW	1	
117	RXQ0558	HOLDER	1	
118	RED0047-1	MAGNETIC HEAD	1	
A1	EUR645272	REMOTE CONTROLLER	1	[MAVD]
A1-1	UR64EC1987B	BATT. COVER	1	
Δ A2	RJA0043-C	AC POWER CORD	1	(E,EG)
Δ A2	RJA0044-C	AC POWER CORD	1	(EB)[MAVD]
A3	RJL1X007B08	OPTICAL CABLE	1	[MAVD]
A4	RJL2P004B08	PIN CORD	2	
A5	RQA0117	WARRANTY CARD	1	
A6	RQCB0169	SERVICE CENTER LIST	1	
A7	RQT4792-D	OPERATING INSTRUCTIONS	1	(EG)<IA>[MAVD]
A8	RQT4794-E	OPERATING INSTRUCTIONS	1	(E)<IB>[MAVD]
A9	RQT4796-B	OPERATING INSTRUCTIONS	1	(EB)<IC>[MAVD]
A10	RQT4793-H	OPERATING INSTRUCTIONS	1	(EG)<ID>[MAVD]
A11	RQT4795-R	OPERATING INSTRUCTIONS	1	(E)<IE>[MAVD]
C1	ECUV1H221KBV	50V 220P	1	
C4	ECUV0J105ZFV	6.3V 1U	1	
C5	ECUVNA224KBV	10V 0.22U	1	
C6	ECUV0J105ZFV	6.3V 1U	1	
C7,C8	ECUVNA224KBV	10V 0.22U	2	
C11	ECUV1C223KBV	16V 0.022U	1	
C12	ECUV0J474KBV	6.3V 0.47U	1	
C13	ECUV1C393KBV	16V 0.039U	1	
C14	ECUV1H102KBV	50V 1000P	1	
C15	ECST0GY106RR	4V 10U	1	
C16	ECUV1H181KV	50V 180P	1	
C17	ECUV1H332KBV	50V 3300P	1	
C18	ECUV1H562KBV	50V 5600P	1	
C19	ECUVNC104ZFV	16V 0.1U	1	
C20	ECST0GY106RR	4V 10U	1	
C21	ECUV1H822KBV	50V 8200P	1	
C22	ECUV1H102KBV	50V 1000P	1	
C23	ECUVNC104ZFV	16V 0.1U	1	
C24	ECUV1H102KBV	50V 1000P	1	
C25	ECUV1C393KBV	16V 0.039U	1	
C26	ECUV1H472KBV	16V 4700P	1	
C28	ECST0GY226RR	4V 22U	1	
C29	ECUV1H332KBV	50V 3300P	1	
C30	ECUV1E123KBV	25V 0.012U	1	
C31,32	ECUV1H102KBV	50V 1000P	2	
C33	ECST0GY106RR	4V 10U	1	
C34,35	ECUV1H102KBV	50V 1000P	2	
C37	ECUV1H181KV	50V 180P	1	
C40	ECUVNC104ZFV	16V 0.1U	1	
C41	ECEV0JA331P	6.3V 330U	1	
C42	ECST0GY106RR	4V 10U	1	
C45	ECST0GY106RR	4V 10U	1	
C46	ECUVNC104ZFV	16V 0.1U	1	
C47	ECUV0J105ZFV	6.3V 1U	1	
C48	ECUVNC104ZFV	16V 0.1U	1	
C50	ECUVNC104ZFV	16V 0.1U	1	
C51,52	ECUV0J105ZFV	6.3V 1U	2	
C53	ECUV1H332KBV	50V 3300P	1	
C55-58	ECUV1H102KBV	50V 1000P	4	
C59	ECUV1C823KBV	16V 0.082U	1	
C60	ECEV1CA100NR	16V 10U	1	
C61	ECUV0J334KBV	16V 0.33U	1	
C62	ECUV1H221KBV	50V 220P	1	
C64	ECUV1E153KBV	25V 0.015U	1	
C65	ECUV1C104KBV	16V 0.1U	1	
C66	ECUV1C823KBV	16V 0.082U	1	
C67	ECUV1H392KBV	50V 3900P	1	
C70	ECUV1E123KBV	25V 0.012U	1	
C71-76	ECUVNC104ZFV	16V 0.1U	6	
C79,80	ECUVNC104ZFV	16V 0.1U	2	
C81	ECUV1H560JCV	50V 56P	1	
C82	ECUV1C473KBV	16V 0.047U	1	
C83,84	ECUVNC104ZFV	16V 0.1U	2	
C85	ECST0GY106RR	4V 10U	1	
C86	ECUV1E153KBV	25V 0.015U	1	
C87	ECUVNC104ZFV	16V 0.1U	1	
C88,89	ECUV1H331KBV	50V 330P	2	
C90,91	ECUV1H080DCV	50V 8P	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C92,93	ECUVNC104ZV	16V 0.1U	2	
C94	ECST0GY475RR	4V 4.7U	1	
C95	ECUVNC104ZV	16V 0.1U	1	
C96,97	ECST0GY475RR	4V 4.7U	2	
C98	ECUVNC104ZV	16V 0.1U	1	
C99	ECUV1H102KBV	50V 1000P	1	
C100	ECUVNC104ZV	16V 0.1U	1	
C101	ECST0GY108RR	4V 10U	1	
C102	ECUVNC104ZV	16V 0.1U	1	
C103	ECST0GY108RR	4V 10U	1	
C106	ECUV1H102KBV	50V 1000P	1	
C110	ECUVNC104ZV	16V 0.1U	1	
C111	ECST0GY108RR	4V 10U	1	
C112	ECEV1CA100NR	16V 10U	1	
C113	ECUVNC104ZV	16V 0.1U	1	
C114,15	ECUV1H561KBV	50V 560P	2	
C117	ECEV0JA331P	6.3V 330U	1	
C118	ECUVNA105KBN	10V 1U	1	
C119	ECUV1H102KBV	50V 1000P	1	
C120	ECUV1H560JCV	50V 56P	1	
C121	ECUV1H102KBV	50V 1000P	1	
C122	ECUV0J105ZV	6.3V 1U	1	
C123	ECUVNC104ZV	16V 0.1U	1	
C128	ECUVNC104ZV	16V 0.1U	1	
C129	ECUV1H101JCV	50V 100P	1	
C133	ECUV0J105ZV	6.3V 1U	1	
C134	ECUV1H331KBV	50V 330P	1	
C138	ECEV0JA470SR	6.3V 47U	1	
C139-42	ECUVNC104ZV	16V 0.1U	4	
C143	ECST0GY108RR	4V 10U	1	
C154,55	ECUV1H330JCV	50V 33P	2	
C301	ECBT1H104ZF5	50V 0.1U	1	
△ C302	ECA1CM103E	16V 1000U	1	
C303	ECBT1H104ZF5	50V 0.1U	1	
C304-06	ECA1HM101	50V 100U	3	
C307	ECBT1H102KB5	50V 1000P	1	
C308	ECEA1HKA220B	50V 22U	1	
C309,10	ECBT1H104ZF5	50V 0.1U	2	
△ C311,12	ECA1EM471	25V 470U	2	
C313,14	ECBT1H104ZF5	50V 0.1U	2	
C315,16	ECA1APXS470B	10V 47U	2	[MAVD]
C317,18	ECA1APXS221B	10V 220U	2	
C321	ECQV1H104JL3	50V 0.1U	1	[MAVD]
C322	ECEA0JKS101	6.3V 100U	1	
C323	ECA0JPXS101	6.3V 100U	1	
C324,25	ECEA0JKS470	6.3V 47U	2	
C326	ECQV1H104JL3	50V 0.1U	1	[MAVD]
C327	ECEA0JKS101	6.3V 100U	1	
C328	ECBT1C103NS5	16V 0.01U	1	
C329	ECEA1CKA470B	16V 47U	1	
C330	ECEA0JKS101	6.3V 100U	1	
C331	ECBT1C103NS5	16V 0.01U	1	
C332	ECEA0JKS220	6.3V 22U	1	
C333	ECEA0JKS101	6.3V 100U	1	
C334	ECA0JM102	6.3V 1000U	1	
C335	ECEA0JKS470	6.3V 47U	1	
C336-39	ECBT1H104ZF5	50V 0.1U	4	
C401,02	ECBT1H104ZF5	50V 0.1U	2	
C403	ECBT1H470J5	50V 47P	1	
C404	ECBT1H104ZF5	50V 0.1U	1	
C502	ECBT1H104ZF5	50V 0.1U	1	
C503	ECQV1H224JL3	50V 0.22U	1	
C504	ECQB1H223JF3	50V 0.022U	1	
C505	ECBT1H102KB5	50V 1000P	1	
C506	ECBT1H470J5	50V 47P	1	
C507	ECBT1H104ZF5	50V 0.1U	1	
C601	ECA1EPXS100B	25V 10U	1	
C602	ECBT1H104ZF5	50V 0.1U	1	
C603	ECA1EPXS100B	25V 10U	1	
C604	ECBT1H104ZF5	50V 0.1U	1	
C605	ECA1EPXS100B	25V 10U	1	
C606	ECBT1H104ZF5	50V 0.1U	1	
C607	ECBT1C222MR5	16V 2200P	1	
C608	ECEA1EKS4R7	25V 4.7U	1	
C609	ECBT1H104ZF5	50V 0.1U	1	
C610	ECBT1C222MR5	16V 2200P	1	
C611	ECEA1EKS4R7	25V 4.7U	1	
C612,13	ECBT1H104ZF5	50V 0.1U	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C711,12	ECA1CPXS470B	16V 47U	2	
C713,14	ECBT1H102KB5	50V 1000P	2	
C715-18	ECCR1H391J5	50V 390P	4	
C719,20	ECA1CPXS470B	16V 47U	2	
C721,22	ECBT1H102KB5	50V 1000P	2	
C751,52	ECBT1H102KB5	50V 1000P	2	
C753,54	ECEA1EKN3R3B	25V 3.3U	2	
C755,56	ECBT1H2R2KC5	50V 2.2P	2	
C757,58	ECEA1EKN3R3B	25V 3.3U	2	
C759,60	ECBT1H104ZF5	50V 0.1U	2	
C761,62	ECEA1EKN3R3B	25V 3.3U	2	
C763-65	ECBT1H104ZF5	50V 0.1U	3	
C766,67	ECEA1EKS4R7	25V 4.7U	2	
C801,02	ECEA1AN101XB	10V 100U	2	
C803-08	ECBT1C103NS5	16V 0.01U	6	
C908	ECEA0JKA221B	6.3V 220U	1	
C909,10	ECBT1H104ZF5	50V 0.1U	2	
C911	ECEA1HKS2R2	50V 2.2U	1	
C912	ECBT1H104ZF5	50V 0.1U	1	
CN1	RJS2A4526T	CONNECTOR (26P)	1	
CN4	RJS2A4830T	CONNECTOR (30P)	1	
CN8	RJS2A4506T	CONNECTOR (6P)	1	
CN201	RJS1A6804	CONNECTOR(4P)	1	
CN251	RJS4T8ZA	CONNECTOR(4P)	1	
CN301	RJS1A6806	CONNECTOR(6P)	1	
CN401	RJS1A6820	CONNECTOR(20P)	1	
CN402	RJS2A3330M	CONNECTOR(30P)	1	
CN711	RJS7T4ZA	CONNECTOR(7P)	1	
CN761	RJT029W06VT	CONNECTOR(6P)	1	
CN801	RJS7T7ZA	CONNECTOR(7P)	1	
CN802	RJU057W004	CONNECTOR(4P)	1	
CN804	RJT029W006-1	CONNECTOR(6P)	1	
CN901	RJS1A6220-1	CONNECTOR(20P)	1	
CN902	SJS50881BB	CONNECTOR(8P)	1	[MAVD]
CP6	RJT113W10M	CONNECTOR (10P)	1	
CP802	RJT057W004-1	CONNECTOR(4P)	1	
D5,D6	SC80209TE12R	DIODE	2	
D9	MA728TX	DIODE	1	
D201	MA728TX	DIODE	1	
△ D301-07	1D3-E	DIODE	7	
△ D308	MA4330M	ZENER DIODE	1	
△ D309,10	1D3-E	DIODE	2	
△ D311,12	MA4091M	ZENER DIODE	2	
D313,14	MA4051M	DIODE	2	
△ D315	MA4062M	DIODE	1	
△ D316	MA4056M	DIODE	1	
D317-20	1SS254TA	DIODE	4	
D321	MA4051M	DIODE	1	
D323,24	1D3-E	DIODE	2	
D451-54	1SS254TA	DIODE	4	
D501	MA304TX	DIODE	1	
D711-17	1SS254TA	DIODE	7	
D901	1SS254TA	DIODE	1	
D902	SLR325MCT31	LED	1	
D903	SLR325VCT31	LED	1	
D904	1SS254TA	DIODE	1	
FL901	RSL0282-F	FL	1	[MAVD]
IC1	AN8772FHQ	IC	1	
IC2	AN8814SB-E1	IC	1	
IC3	MN66616RA1	IC	1	
IC4	AK4518VF-E2	IC	1	
△ IC5	RN5RG33AA-TL	IC	1	
IC6	TC7W04FTE12L	IC	1	
△ IC9	RN5RZ26BA-TR	IC	1	
IC10	MN101DF03DAA	IC	1	
IC11	TC74HCT00AFL	IC	1	
IC72	MNV4400-T8T	IC	1	
IC92	LB1830MS-TLM	IC	1	
△ IC301-03	BA05ST-V5	IC	3	
△ IC304	S81233SGY-Z	IC	1	
IC401	TC74HCT7007A	IC	1	
IC402	TC74HC4050EL	IC	1	
IC501	TC9246FELP	IC	1	

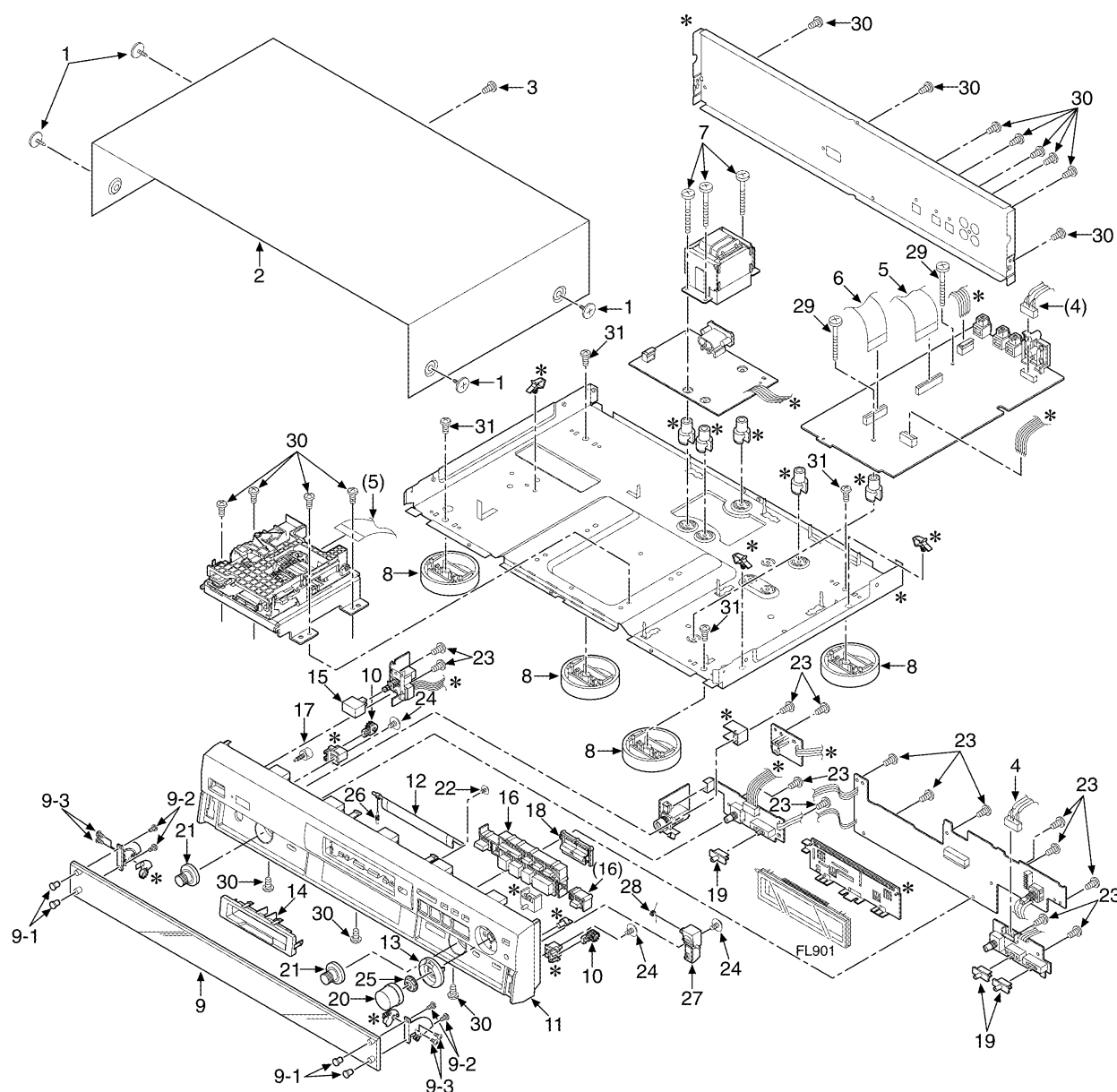
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
IC601	AK4520AVF-E1	IC	1	[MAVD]
IC711	BA4560FE2	IC	1	
IC751	BA4560FE2	IC	1	
IC801	M5218AFPE3	IC	1	
IC901	M30218MAA102	IC	1	[MAVD]
△ ICP301	SRUN10	IC PROTECTOR	1	
△ JK201	SJS9236	AC IN	1	
JK701	SJF3069-4N	LINE IN/OUT	1	
JK702	GP1F32T	OPTICAL OUTPUT	1	
JK703,04	GP1F32R	OPTICAL INPUT	2	
JK801	SJJD19	HEADPHONE	1	
L1	RLQU100KT-W	COIL	1	
L2,L3	RLQU101KT-W	COIL	2	
L4-L8	RLQU2R2MT-W	COIL	5	
L9-12	RLQU100KT-W	COIL	4	
L13,14	RLQU2R2MT-W	COIL	2	
L15	RLQU100KT-W	COIL	1	
△ L201,02	SLQX400-D	COIL,CHOKE	2	
L501	EXCELD35V	COIL,CHOKE	1	
L502	ELEXT5R6KA	COIL	1	[MAVD]
L601	EXCELD35V	COIL,CHOKE	1	
L801,02	RLQZP3R3KT-Y	COIL,CHOKE	2	
P1	RPF0139	POLYETHYLENE COVER	1	
P2	RPG4126	PAKING CASE	1	[MAVD]
P3	RPN1150	CUSHION	1	[MAVD]
P4	SPP730	PROTECTION COVER	1	
Q1	2SB1295-6-TB	TRANSISTOR	1	
Q2	DTC114YETL	TRANSISTOR	1	
Q3	2SB1462STX	TRANSISTOR	1	
Q5	2SB1295-6-TB	TRANSISTOR	1	
Q6	DTC114YETL	TRANSISTOR	1	
Q10	2SJ278MYTR	FET	1	
Q11	2SK1764KYTR	FET	1	
△ Q13	2SB1121ST-TD	TRANSISTOR	1	
Q301,02	2SC3327A	TRANSISTOR	2	
Q303	2SA933SQR	TRANSISTOR	1	
Q304	DTA114ESTP	TRANSISTOR	1	
△ Q305	2SD1862QRTV6	TRANSISTOR	1	
△ Q306	2SB1240-P	TRANSISTOR	1	
△ Q307	2SD1862QRTV6	TRANSISTOR	1	
△ Q308	2SD2037EFTA	TRANSISTOR	1	
Q401-03	DTC114ESTP	TRANSISTOR	3	
△ Q451	2SD1862QRTV6	TRANSISTOR	1	
Q452	DTC114ESTP	TRANSISTOR	1	
Q453	DTA114ESTP	TRANSISTOR	1	
Q454,55	DTA143ESTP	TRANSISTOR	2	
Q703-06	2SC3327A	TRANSISTOR	4	
Q801,02	2SC3327A	TRANSISTOR	2	
Q901	DTA114ESTP	TRANSISTOR	1	
Q902-05	DTC114ESTP	TRANSISTOR	4	
Q913	DTC114ESTP	TRANSISTOR	1	
R1	ERJ3GEYJ472V	1/16W 4.7K	1	
R2	ERJ3GEYJ102Z	1/16W 1K	1	
R3	ERJ3GEYJ472V	1/16W 4.7K	1	
R4	ERJ3GEY0R00V	CHIP JUMPER	1	
R5	ERJ3GEYJ1R0V	1/16W 1	1	
R6	ERJ3GEYJ472V	1/16W 4.7K	1	
R8	ERJ3GEYJ271V	1/16W 270	1	
R10	ERJ3GEYJ474V	1/16W 470K	1	
R11	ERJ3GEYJ101V	1/16W 100	1	
R12	ERJ3GEYJ223V	1/16W 22K	1	
R13	ERJ6GEYJ3R3V	1/8W 3.3	1	
R14	ERJ3GEYD103V	1/16W 10K	1	
R15	ERJ3GEYJ223V	1/16W 22K	1	
R16	ERJ3GEYJ104Z	1/16W 100K	1	
R17	ERJ3GEYJ223V	1/16W 22K	1	
R18	ERJ3GEYJ103Z	1/16W 10K	1	
R19	ERJ3GEYJ102Z	1/16W 1K	1	
R20	ERJ3GEYJ473V	1/16W 47K	1	
R21	ERJ3GEYJ223V	1/16W 22K	1	
R22	ERJ3GEY0R00V	CHIP JUMPER	1	
R23	ERJ3GEYJ272V	1/16W 2.7K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R24	ERJ3GEYJ473V	1/16W 47K	1	
R25	ERJ3GEYJ104Z	1/16W 100K	1	
R26	ERJ3GEYJ473V	1/16W 47K	1	
R28,29	ERJ3GEYJ473V	1/16W 47K	2	
R30	ERJ3GEYJ102Z	1/16W 1K	1	
R31	ERJ3GEYJ223V	1/16W 22K	1	
R32	ERJ3GEYJ473V	1/16W 47K	1	
R34	ERJ3GEYJ272V	1/16W 2.7K	1	
R35	ERJ3GEYJ183V	1/16W 18K	1	
R36	ERJ3GEYJ273V	1/16W 27K	1	
R37	ERJ3GEYJ333V	1/16W 33K	1	
R38	ERJ3GEYJ223V	1/16W 22K	1	
R42	ERJ3GEYJ102Z	1/16W 1K	1	
R43	ERJ3GEYJ222V	1/16W 2.2K	1	
R44	ERJ3GEYJ223V	1/16W 22K	1	
R45	ERJ3GEYJ333V	1/16W 33K	1	
R46	ERJ3GEYJ222V	1/16W 2.2K	1	
R47	ERJ3GEYJ473V	1/16W 47K	1	
R48,49	ERJ3GEY0R00V	CHIP JUMPER	2	
R50	ERJ3GEYJ102Z	1/16W 1K	1	
R55	ERJ3GEYJ332V	1/16W 3.3K	1	
R56	ERJ3GEYJ223V	1/16W 22K	1	
R58	ERJ3GEYJ682V	1/16W 6.8K	1	
R59	ERJ3GEYJ683V	1/16W 68K	1	
R60	ERJ3GEYJ332V	1/16W 3.3K	1	
R61,62	ERJ3GEYJ223V	1/16W 22K	2	
R63	ERJ3GEYJ103Z	1/16W 10K	1	
R64-66	ERJ3GEYJ471V	1/16W 470	3	
R67	ERJ3GEYJ102Z	1/16W 1K	1	
R70	ERJ3GEYJ102Z	1/16W 1K	1	
R71,72	ERJ3GEYJ220V	1/16W 22	2	
R73	ERJ3GEYJ393V	1/16W 39K	1	
R74	ERJ3GEYJ822V	1/16W 8.2K	1	
R75	ERJ3GEYJ223V	1/16W 22K	1	
R76	ERJ3GEYJ100V	1/16W 10	1	
R77	ERJ3GEYJ223V	1/16W 22K	1	
R78-80	ERJ3GEYJ102Z	1/16W 1K	3	
R81	ERJ3GEYJ223V	1/16W 22K	1	
R82	ERJ3GEYJ473V	1/16W 47K	1	
R83	ERJ3GEYJ105V	1/16W 1M	1	
R84	ERJ3GEYJ153V	1/16W 15K	1	
R85	ERJ3GEYJ223V	1/16W 22K	1	
R86,87	ERJ3GEYJ102Z	1/16W 1K	2	
R89,90	ERJ3GEYJ102Z	1/16W 1K	2	
R93	ERJ3GEYJ102Z	1/16W 1K	1	
R95	ERJ3GEYJ222V	1/16W 2.2K	1	
R98,99	ERJ3GEYJ102Z	1/16W 1K	2	
R100	ERJ3GEYJ473V	1/16W 47K	1	
R103	ERJ3GEYJ102Z	1/16W 1K	1	
R104,05	ERJ3GEYJ272V	1/16W 2.7K	2	
R107	ERJ3GEYJ102Z	1/16W 1K	1	
R108	ERJ3GEYJ271V	1/16W 270	1	
R109,10	ERJ3GEYJ102Z	1/16W 1K	2	
R111,12	ERJ3GEYJ221V	1/16W 220	2	
R113	ERJ3GEY0R00V	CHIP JUMPER	1	
R114,15	ERJ3GEYJ103Z	1/16W 10K	2	
R116,17	ERJ3GEYJ101V	1/16W 100	2	
R118	ERJ3GEYJ102Z	1/16W 1K	1	
R119,20	ERJ3GEYJ101V	1/16W 100	2	
R121,22	ERJ3GEYJ272V	1/16W 2.7K	2	
R123	ERJ3GEYJ102Z	1/16W 1K	1	
R124,25	ERJ3GEYJ473V	1/16W 47K	2	
R130	ERJ3GEYJ272V	1/16W 2.7K	1	
R131	ERJ3GEYJ101V	1/16W 100	1	
R132	ERJ3GEYJ272V	1/16W 2.7K	1	
R133	ERJ3GEY0R00V	CHIP JUMPER	1	
R134,35	ERJ3GEYJ272V	1/16W 2.7K	2	
R137	ERJ3GEYJ103Z	1/16W 10K	1	
R143	ERJ3GEY0R00V	CHIP JUMPER	1	
R145,46	ERJ3GEYJ221V	1/16W 220	2	
R147	ERJ3GEYJ102Z	1/16W 1K	1	
R174	ERJ3GEYJ103Z	1/16W 10K	1	
R201	ERJ3GEYJ472V	1/16W 4.7K	1	
△ R201A	ERQ16NKR10E	1/8W 0.1	1	
R210	ERJ3GEYJ391V	1/16W 390	1	
R211	ERJ3GEYJ101V	1/16W 100	1	
R212	ERJ3GEYJ391V	1/16W 390	1	
R213	ERJ3GEYJ101V	1/16W 100	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R214	ERJ3GGEY0R00V	CHIP JUMPER	1	
R215	ERJ3GEYJ391V	1/16W 390	1	
R301,02	ERDS2FJ183	1/4W 18K	2	
R303	ERDS2FJ1R2	1/4W 1.2	1	
R304,05	ERDS2FJ681	1/4W 680	2	
△ R306	ERD2FCG100	1/4W 10	1	
R307	ERDS2FJ182	1/4W 1.8K	1	
R308	ERDS2FJ221	1/4W 220	1	
R309,10	ERDS2FJ103	1/4W 10K	2	
△ R311,12	ERD2FCJ4R7	1/4W 4.7	2	
R313,14	ERDS2FJ681	1/4W 680	2	
R315,16	ERDS2FJ271	1/4W 270	2	
R317,18	ERDS2FJ102	1/4W 1K	2	
R319	ERDS2FJ681	1/4W 680	1	
R320	ERDS2FJ101	1/4W 100	1	
R321	ERDS2FJ221	1/4W 220	1	
R322	ERDS2FJ101	1/4W 100	1	
R323,24	ERDS2FJ222	1/4W 2.2K	2	
R325	ERDS2FJ223	1/4W 22K	1	
R326	ERDS2FJ103	1/4W 10K	1	
R327	ERDS2FJ1R2	1/4W 1.2	1	
R401-03	ERDS2FJ103	1/4W 10K	3	
R404	ERDS2FJ271	1/4W 270	1	
R405	ERDS2FJ103	1/4W 10K	1	
R406	ERDS2FJ271	1/4W 270	1	
R407	ERDS2FJ102	1/4W 1K	1	
R408	ERDS2FJ271	1/4W 270	1	
R409-11	ERDS2FJ102	1/4W 1K	3	
R451,52	ERDS2FJ103	1/4W 10K	2	
R453	ERDS2FJ222	1/4W 2.2K	1	
R501	ERDS2FJ104	1/4W 100K	1	
R502	ERDS2FJ222	1/4W 2.2K	1	
R503	ERDS2FJ103	1/4W 10K	1	
R504	ERDS2FJ102	1/4W 1K	1	
△ R601	ERD2FCJ4R7	1/4W 4.7	1	
R602	ERDS2FJ102	1/4W 1K	1	
R711,12	ERDS2FJ561	1/4W 560	2	
R713,14	ERDS2FJ473	1/4W 47K	2	
R715,16	ERDS2FJ822	1/4W 8.2K	2	
R717,18	ERDS2FJ123	1/4W 12K	2	
R719-22	ERDS2FJ333	1/4W 33K	4	
R723,24	ERDS2FJ154	1/4W 150K	2	
R725,26	ERDS2FJ331	1/4W 330	2	
R727-30	ERDS2FJ151	1/4W 150	4	
R731-34	ERDS2FJ102	1/4W 1K	4	
R751-54	ERDS2FJ273	1/4W 27K	4	
R755,56	ERDS2FJ333	1/4W 33K	2	
R757,58	ERDS2FJ224	1/4W 220K	2	
R759,60	ERDS2FJ471	1/4W 470	2	
R761	ERDS2FJ222	1/4W 2.2K	1	
R801,02	ERDS2FJ680	1/4W 68	2	
R803,04	ERDS2FJ222	1/4W 2.2K	2	
R805,06	ERDS2FJ472	1/4W 4.7K	2	
R902	ERDS2FJ103	1/4W 10K	1	
R903-05	ERDS2FJ104	1/4W 100K	3	
R906	ERDS2FJ472	1/4W 4.7K	1	
R907	ERDS2FJ222	1/4W 2.2K	1	
R908-12	ERDS2FJ103	1/4W 10K	5	
R913	ERDS2FJ821	1/4W 820	1	
R914	ERDS2FJ102	1/4W 1K	1	
R915	ERDS2FJ122	1/4W 1.2K	1	
R916	ERDS2FJ152	1/4W 1.5K	1	
R917	ERDS2FJ182	1/4W 1.8K	1	
R918	ERDS2FJ821	1/4W 820	1	
R919	ERDS2FJ102	1/4W 1K	1	
R920	ERDS2FJ122	1/4W 1.2K	1	
R921	ERDS2FJ152	1/4W 1.5K	1	
R922	ERDS2FJ182	1/4W 1.8K	1	
R923	ERDS2FJ222	1/4W 2.2K	1	
R925	ERDS2FJ332	1/4W 3.3K	1	
R928,29	ERDS2FJ103	1/4W 10K	2	
R932	ERDS2FJ104	1/4W 100K	1	
R933	ERDS2FJ101	1/4W 100	1	
R934	ERDS2FJ562	1/4W 5.6K	1	
R937	ERDS2FJ561	1/4W 560	1	
R938	ERDS2FJ471	1/4W 470	1	
R940-44	ERDS2FJ103	1/4W 10K	5	

[illegible]

■ Cabinet Parts Location

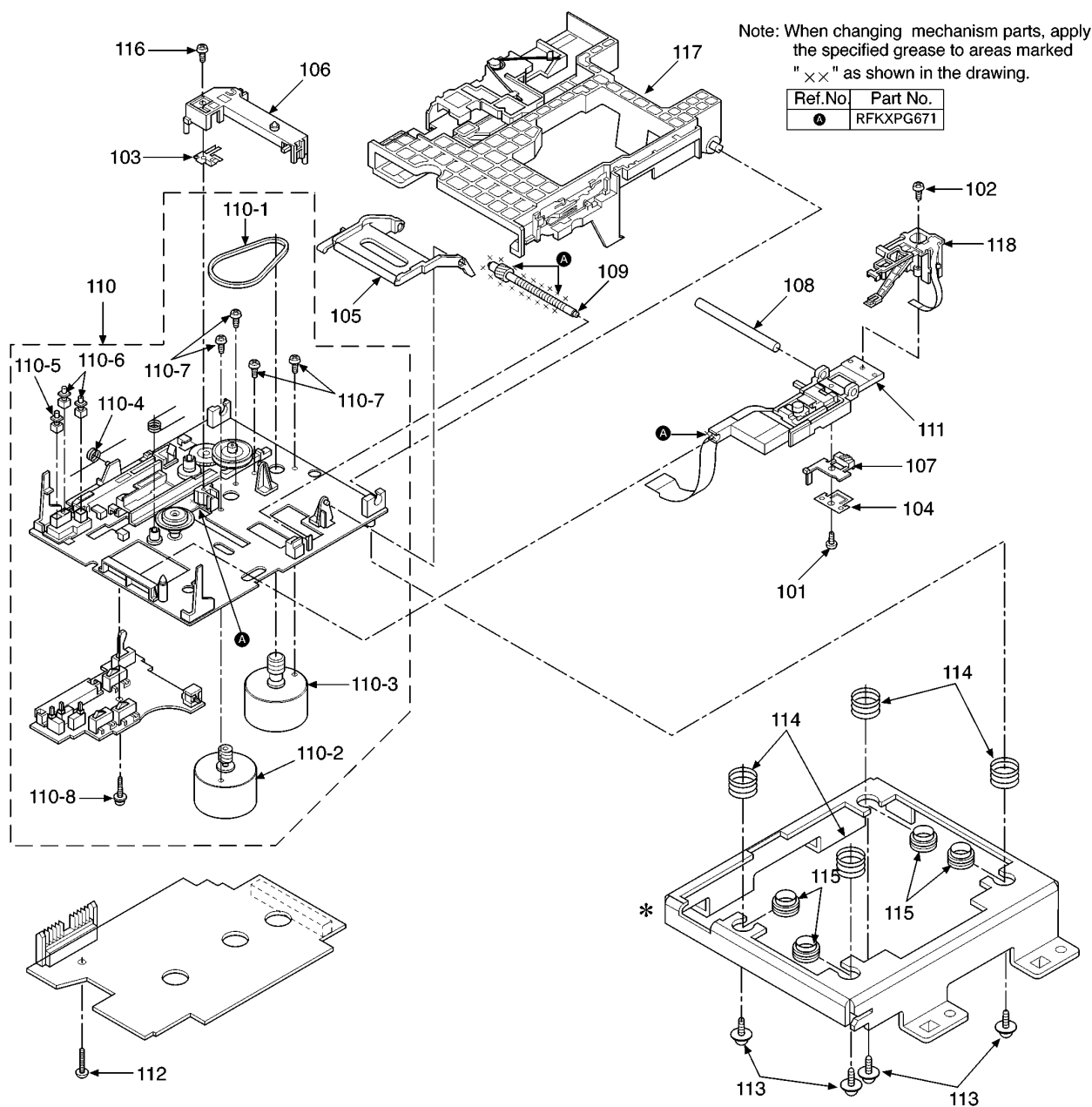


Note : We do not supply those items of parts marked * .

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RHD30035-K	SCREW	4	
2	RKM0152-K	TOP CABINET	1	
3	XTBS3+8JFZ1	SCREW		
4	REX0945	WIRE ASS'Y	1	[MAVD]
5	REZ1159	FLAT CABLE (30P)	1	[MAVD]
6	REZ1160	FLAT CABLE (20P)	1	[MAVD]
7	RHD30053	SCREW	3	
8	RKA0040B-K1	FOOT	4	
9	RYP0501-Q	DOOR UNIT	1	[MAVD]
9-1	RGK1111-K	NUT	4	[MAVD]
9-2	RHD26033	SCREW	4	[MAVD]
9-3	XTS2+4GFZ	SCREW	4	
10	RDG0449	GEAR	2	[MAVD]
11	RYP859Z-K	FRONT PANEL ASS'Y	1	[MAVD]
12	RGK0977-1S	MD LID	1	[MAVD]
13	RGK1112-S	ORNAMENT	1	[MAVD]
14	RGK1113-S	MD SLOT ORNAMENT	1	[MAVD]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
15	RGU0890-1K	BUTTON,POWER	1	[MAVD]
16	RGU1708-K	BUTTON,MAIN	1	[MAVD]
17	RGU1712-K	BUTTON,OPEN	1	[MAVD]
18	RGU1714-S	BUTTON,PLAY MODE	1	[MAVD]
19	RGV0112-S	KNOB,SLIDE	3	[MAVD]
20	RGW0308-K	KNOB,JOG	1	[MAVD]
21	RGW0310-S	KNOB,VOLUME	2	[MAVD]
22	RHD20010	SCREW	1	
23	RHD26021	SCREW	14	
24	RHD26034	SCREW	3	[MAVD]
25	RHN70002	NUT	1	
26	RMB0514	SPRING	1	
27	RKG0009	MAGNET	1	
28	RME0284	SPRING	1	[MAVD]
29	XTBR3+20JFZ	SCREW	2	
30	XTBS3+8JFZ1	SCREW	15	
31	XTB3+10JFZ	SCREW	4	

■ MD Mechanism Parts Location

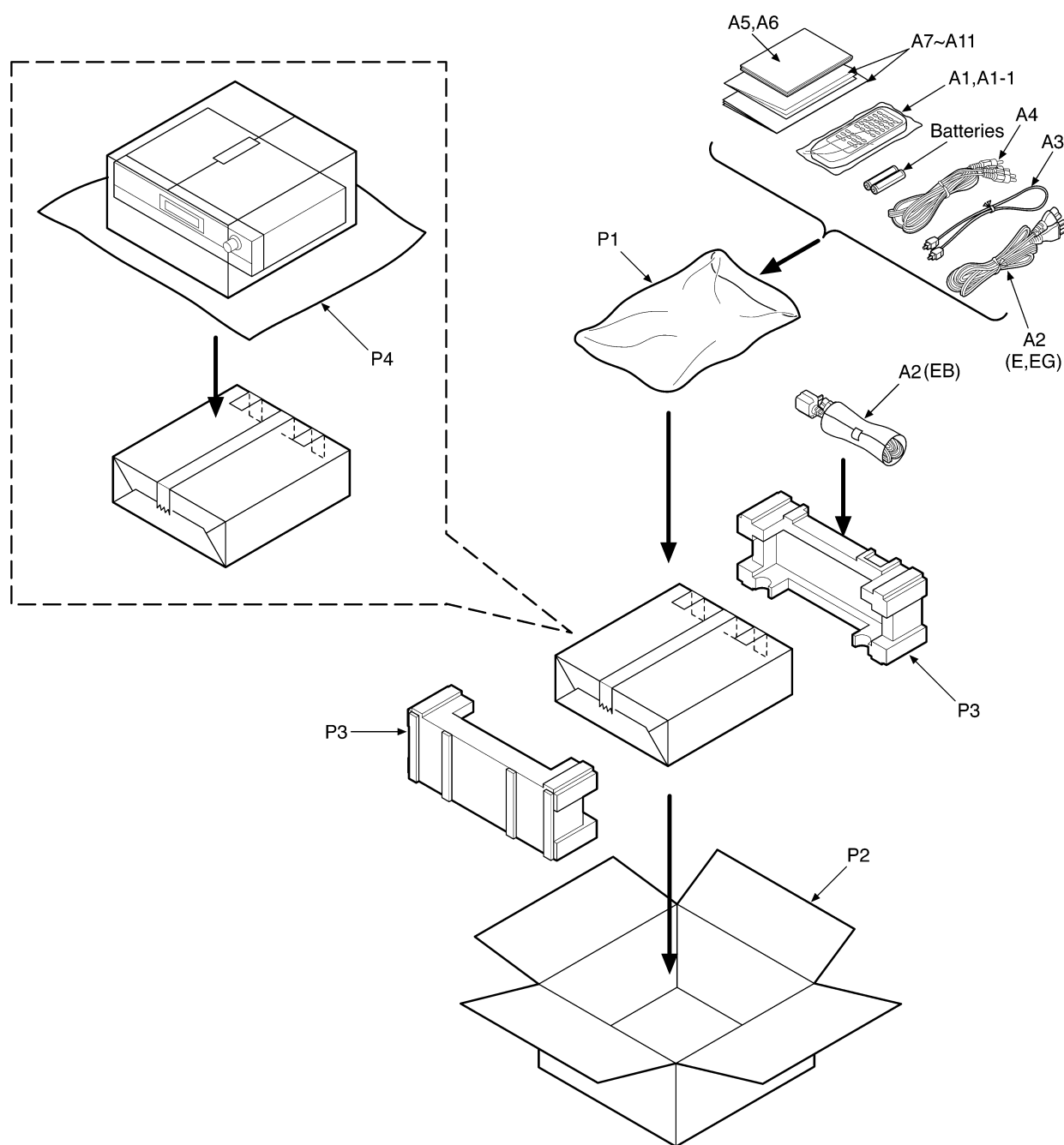


Note: We do not supply those items of parts marked *.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
101	RHD17021	SCREW	1	
102	RHD17022	SCREW	1	
103	RMC0348	SPRING	1	
104	RMC0349	SPRING	1	
105	RML0515	HEAD GUIDE	1	
106	RMQ0750	BASE	1	
107	RMQ0751	NUT PLATE	1	
108	RMS0611	SHAFT	1	
109	RXJ0021	GUIDE SHAFT	1	
110	RXK0249	CHASSIS	1	
110-1	RDV0055	BELT	1	
110-2	REM0077	MOTOR 1	1	
110-3	REM0078	MOTOR 2	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
110-4	RMB0548	SPRING	1	
110-5	RMQ0752	DETECTOR PIN 1	1	
110-6	RMQ0753	DETECTOR PIN 2	2	
110-7	XQN17+C25FZ	SCREW	4	
110-8	XYC2+FF105	SCREW	1	
111	RAF1700A	OPTICAL PICK UP	1	
112	XTW2+6S	SCREW	1	
113	RHD20053	SCREW	4	
114	RMB0504	SPRING	4	
115	RMG0447-K	DAMPER RUBBER	4	
116	XTN17+6GFZ	SCREW	1	
117	RXQ0558	HOLDER	1	
118	RED0047-1	MAGNETIC HEAD	1	

■ Packaging



Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
A1	EUR645272	REMOTE CONTROLLER	1	[MAVD]
A1-1	UR64EC1987B	BATT. COVER	1	
△ A2	RJA0043-C	AC POWER CORD	1	(E,EG)
△ A2	RJA0044-C	AC POWER CORD	1	(EB)[MAVD]
A3	RJL1X007B08	OPTICAL CABLE	1	[MAVD]
A4	RJL2P004B08	PIN CORD	2	
A5	RQA0117	WARRANTY CARD	1	
A6	RQCB0189	SERVICE CENTER LIST	1	
A7	RQT4792-D	OPERATING INSTRUCTIONS	1	(EG)<IA>[MAVD]
A8	RQT4794-E	OPERATING INSTRUCTIONS	1	(E)<IB>[MAVD]
A9	RQT4796-B	OPERATING INSTRUCTIONS	1	(EB)<IC>[MAVD]
A10	RQT4793-H	OPERATING INSTRUCTIONS	1	(EG)<ID>[MAVD]
A11	RQT4795-R	OPERATING INSTRUCTIONS	1	(E)<IE>[MAVD]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
P1	RPF0139	POLYETHYLENE COVER	1	
P2	RPG4126	PACKING CASE	1	[MAVD]
P3	RPN1150	CUSHION	1	[MAVD]
P4	SPP730	PROTECTION COVER	1	